







S. 474.





View looking to the North.



View looking to the South.

IN HELIGOLAND:

TWO VIEWS OF MR. GÄTKE'S GARDEN.

THE
NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

RECORDER TO AND EX-PRESIDENT OF THE CONCHOLOGICAL SOCIETY, AND HON. SECRETARY
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COMMITTEE ON THE MIGRATION OF BIRDS; HON. SECRETARY YORKSHIRE
NATURALISTS' UNION, &c.

1888.

LONDON:

LOVELL REEVE & Co., 5, HENRIETTA STREET, COVENT GARDEN, E.C.

M^cCORQUODALE & Co. LIMITED, CARDINGTON STREET, EUSTON;

AND

LEEDS: BASINGHALL STREET.

1888.

PREFACE.

THE first duty of the Editors is to thank their contributors and their subscribers—the former for the excellence of the articles which have during the year maintained the standard of *The Naturalist* at its accustomed level, the latter for their appreciation and their kind support.

That the Editors have not been unsuccessful in doing justice to all departments of their subject will be seen by a glance through the volume. In Geology—the two admirable Reports on Yorkshire Boulders, the papers on Coal-dust and Explosions in Coal-mines, and on Igneous Dykes; in Botany—those on the Pennine District Florula of Cumberland, Lincolnshire Marsh and Water Plants, the Flora of Wensleydale, the Lichens, Hepaticæ and Mosses of Westmorland, the list of West Yorkshire Fungi and the numerous additions to the Flora of West Yorkshire; in Entomology—the account of a visit to the Isle of Man, and the valuable list of Lincolnshire Hemiptera-Heteroptera; in Conchology—the list of Airedale Mollusca; and in Ornithology—the numerous records of Pallas' Sand-Grouse; all testify that the Editors have had provided for them the means of catering for all classes of their readers.

In addition to this, attention may be drawn to the valuable paper on Heligoland, and the autotype illustration which by its author's kindness forms the frontispiece to this volume.

The publication of the Bibliography has been resumed, and the present volume contains several valuable instalments of it.

As to the future, a change in the editorship has to be announced. Hitherto *The Naturalist* has had the benefit of being conducted by two Editors resident in the same town, first by Messrs. Hobkirk and Porritt at Huddersfield, and then by the present Editors at Leeds.

Mr. Clarke's removal to Edinburgh unfortunately brings this state of things to a close ; and, for the next year's volume at any rate, the dual control will give place to a new arrangement, whereby Mr. Roebuck becomes general editor, with the assistance of specialists in various departments of study. Mr. Clarke will continue to take charge of the vertebrate zoology ; botanical papers will be submitted to Mr. J. Gilbert Baker, F.R.S., F.L.S., and Mr. Chas. P. Hobkirk, F.L.S., a former editor ; another former editor, Mr. Geo. T. Porritt, F.L.S., F.E.S., will exercise oversight of the entomological articles ; while those on geology will be submitted to Mr. Alfred Harker, M.A., F.G.S. ; and on micro-zoology and micro-botany to Mr. W. Barwell Turner, F.C.S., F.R.M.S. The mere mention of these names will suffice to justify a confident expectation that in the future *The Naturalist* will be even more worthy of support in the future than it has been in the past.

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All Communications should be Addressed:—

The Editors of 'The Naturalist,'

Park Row, Leeds.

With Photographic Plate, PRICE ONE SHILLING (Post free).

ANNUAL SUBSCRIPTION (from the OFFICE only), 5s., post free.

Will be ready first week in February, cloth cases for 1887, corresponding with those issued for 1886. Price 8d. each.

The NATURALIST.

It being the wish of the Editors to make the journal the recognised organ for information concerning the natural history of the North of England, they hope to rely on Naturalists keeping them supplied with articles and short notes from time to time.

Communications should be written on *one side* of the paper only, and should be sent as soon after the commencement of the month as possible.

Short Notes of important occurrences will be received up to the 20th of the month, and specially urgent ones even later.

Authors' Reprints.—15 copies of the *Naturalist* are given to authors of papers exceeding 3 pages. Reprints may be had at the following rates, if the order is given on returning proof: 50 copies. 4 pp. 4/-; 8 pp. 5/6; 12 pp. 7/-; 16 pp. 9/-; 100 copies. 4 pp. 6/6; 8 pp. 8/-; 12 pp. 10/6; 16 pp. 13/-. Covers extra.

BOOKS RECEIVED.

- The Manx Book, No. 12, for October 1887. [Mr. A. W. Moore, Editor.
The Zoologist, No. 132, for December 1887. [Mr. J. E. Harting, Editor.
The Garner, No. 27, for December 1887. [Mr. A. Ramsay, Editor.
Revue Bryologique, 14^e Année, 1887, No. 6. [Mons. T. Husnot, Redacteur.
Flower-Land: an Introduction to Botany for Children, and for the use of Parents and Teachers. By Robert Fisher, M.A. (Vicar of Sewerby, Hull). Small 8vo. 62 pages. [John Heywood, publisher, Manchester.
Hertfordshire Nat. Hist. Society.—Trans., Vol. iv., Part 7, Nov. 1887. [Society.
Grevillea, No. 78, for December 1887. [Dr. M. C. Cooke, Editor.
Manchester Geological Society.—Trans., Parts xi & xii of Vol. xix. [Society.
J. G. Goodchild on Ice Work in Edenside and some of the adjoining parts of North-Western England. 8vo. Reprint, 57 pages. 1887. [Author.
J. H. Gurney on the Misdeeds of the Common House-Sparrow. 1887. 8vo., 9 pp. [Author.
Nat. Hist. Journal, vol. xi, No. 99, for December 1887. [Editors, York.
The Essex Naturalist, No. 11, for November 1887. [The Essex Field Club.
Naturalists' World, vol. iv, No. 48, December 1887. [Percy Lund, Editor.
Journal of New York Micro. Soc., vol. iii, No. 4, October 1887. [The Society.
The Young Naturalist, Part xvi, for Dec. 1887. [Mr. J. E. Robson, Editor.
The Midland Naturalist, vol. x. No. 120, for Dec. 1887. [The Editors, Birmingham.
Science Gossip, No. 275, for Nov. 1887. [Messrs. Chatto & Windus, Publishers.
Wesley Naturalist, No. 10, December 1887. [The Wesley Scientific Society.

EXCHANGE.

Notices of Exchange inserted free of charge to Subscribers.

Dragon Flies.—Mr. W. Harcourt Bath, Ladywood, Birmingham, desires to correspond with students of the Odonata in all parts of the globe, as he is specially working up this group of insects. Specimens for figuring in his forthcoming 'Monograph of British Dragon Flies' will be specially acceptable. There is, probably, no class of insects so neglected as Dragon Flies, and Mr. W. Harcourt Bath will be very pleased to assist anyone desirous of commencing their study.

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THE NATURALIST

For 1888.

HELIGOLAND.

JOHN CORDEAUX, M.B.O.U.,

Great Cotes, Ulceby, Lincolnshire.

THE Ornithology of Heligoland should have a special interest for Yorkshire naturalists, from the fact that Flamborough Head lies almost exactly in the latitude of this north-sea island.* Migrating birds which pass Heligoland are seen to travel directly westward; consequently, it is reasonable to presume that some portion of these eventually strike the Yorkshire coast. Mr. J. H. Gurney, jun., has, with much diligence, drawn up a comparative table† showing special coincidences in the migration of the same species to Heligoland and the east coast of England, and he enumerates at least twenty-seven instances in which well-marked migratory movements on that island may be correlated with similar movements on the English coast between the years 1868 and 1883. Had the materials at Mr. Gurney's disposal been fuller and more complete, no doubt many other corresponding movements than those recorded by him might have been adduced.

The occurrence of the Rustic Bunting (now in the York Museum) both at Spurn and at Heligoland on the same day, Sept. 17th, 1881, with light variable easterly winds, is interesting as further connecting the two localities. The Barred Warbler and Desert Chat are now also recorded from both places, and the Arctic Bluethroat and Shorelark have in late years been observed in some numbers on the coast at or near Spurn.

In drawing a comparison between the two localities it must be borne in mind that Heligoland has great advantages as an ornithological station from its isolated position and the smallness of the area to be observed, and the comparatively large number of those living there who can at once recognise a strange visitor when it appears, as well also from the fact that it lies in the track of a much-used and well-established highway of migration. On the other

* Flamborough Head, Lat. $54^{\circ} 7' N.$; Heligoland, Lat. $54^{\circ} 10' 46'' N.$

† Trans. Norfolk and Norwich Naturalists' Society, vol. iv, part 1, pp. 52-61.

hand, a rare immigrant arriving on the Yorkshire coast will probably escape observation altogether, both from the great extent of coastline and inland cover, as well as the scarcity of competent observers.

In the autumn of 1874 I visited Heligoland in H.M. cutter 'Active,' and was subsequently able, by the assistance of Mr. Gätke, to give some account of the ornithology of the island in a paper which appeared in *The Ibis* for 1875. This summer (1887) I paid a second visit there, leaving Grimsby on July 19th in the S.S. 'Northenden,' and landing in Hamburg with one hour to spare to catch the Heligoland boat, the fine new S.S. 'Freia.' The average passage is seven or eight hours, a considerable portion of which is occupied in running down the Elbe. When crossing the North Sea a few Herring Gulls and an occasional Guillemot were observed, and as we neared the Neuwerk Lighthouse, the first land seen on approaching the Elbe,* a large flight of Terns collected in our wake, on the look-out for any small morsel of food brought to the surface by the revolutions of the screw or tossed in the creamy eddies slipping away from under the counter. These Terns were all the so-called Common species; occasionally the crowd was joined by two or three Sandwich Tern, but these latter appeared much less trustful of man and his works, and kept at some distance. Near the harbour of Cuxhaven I saw some Kittiwakes and two pair of Lesser Terns, also a single Scoter, swimming close to the landing jetty.

I know no prettier sight on the lower Elbe at this season than to watch the large flights of Tern which, mile after mile, hover in close attendance on the steamboats passing up and down the river. There is a perpetual glance of white fish-shaped bodies, and a flicker of slowly-beating wings, crossing and re-crossing, rising and falling, turning, twisting, or hanging poised—all seem as if intent on threading the mazes of some complicated aerial dance, yet at the same time making good progress ahead. Sometimes they drift so close that they barely escape a rebuff from the flapping of the big German ensign blown out from the flagstaff at the stern. I can hear their 'kree-kreea' above the throbs of the engine and the shuddering of the huge paddles, and can see the glitter of the keen hard restless eyes, ever directed downwards to search the tumbling waters racing astern, well able to pick out the smallest atoms of floating matter. Now one, and then another, will swoop like arrows to the surface, or they stoop only part-way, and then as quickly rise, momentarily

* The Neuwerk is an old square tower on a sandy island of that name, and was originally (so says the Guide Book) erected in 1290, as a castle to protect the mouth of the river against pirates. Since 1870, the entrance to the Elbe at Cuxhaven has been very strongly fortified with earthworks and heavy guns.

perhaps deceived by the drift of some bottle-cork ; often, too, several stoop at the same object, and then there is a chorus of angry screams as the least successful of the graceful foragers mount to their former level. Out of hundreds seen thus following the steamboats, I did not identify an Arctic Tern (*Sterna macrura*), a fact rather remarkable considering how common this species is on the English coast. Amongst the Terns which follow in our wake down the Elbe was a Little Gull (*Larus minutus*). This was an adult, but it had the black on the head much broken, the forehead and occiput being streaked with greyish-black. The flight was very elegant and tern-like, its stoop also was that of a tern, and when hovering and in the act of taking food, the tail, which was pure white above and below, was expanded to the full, and I then noticed it was slightly but perceptibly forked.

As we approach Heligoland from the Elbe the island appears to much advantage ; first, as a grey-blue lump on the horizon, massive and square, and as mile after mile are run over, slowly the natural features develop, a narrow green stripe of upper cliff crowning the broad deep band of red sandstone, and lowest of all and to the foreground are the white sands of *Sand-insel*, or Sandy Island. Green, red, and white—these three colours in successive stripes constitute the flag of this small dependency, for so runs a rhyme :—

Grön is dat Land,
Rohd de Kant
Und witt de sand :
Dat is dat Wappen
von Helgoland.

Some miles off at sea the lodging-houses on the upper plateau (Oberland) stand out very prominently in blocks along the edge of the cliff, and beyond is the spire of the church and the lighthouse. The land below the cliff (Unterland) is also seen to be crowded with houses, mostly erections of wood. The steamboats anchor in the Sound, between the main island and the düne (*Sand-insel*). Passengers are landed at the pier—the chief promenade—in boats. There is no trouble about luggage, which is taken to the waiting-house in the Unterland ; you can choose lodgings and then go and claim the luggage, which is carried by porters to your rooms.

There is a curious old map of Heligoland, reproduced by Herr Rudolph Crell in his Guide*, which shows the island (from

* This map was originally drawn by the Royal Mathematician, Johannes Meier, of Husum, Denmark (born 1606), and appeared in 'The New Topography of the Dukedoms of Schleswig and Holstein,' by Bürgermeister Dr. Kasper Daukwerth, at Husum, in 1652.

tradition) as of very considerable extent in the year 800, having then not less than seven havens or anchoring-places, and numerous villages and streams. In 1649, actual survey represents it as reduced to less than one-fourth of its traditional extent. At a comparatively recent period the main island appears to have been connected with Sand-insel, and there is also represented near the latter a considerable outlier of solid rock, which has disappeared altogether.

I found that since my last visit an enterprising Berlin firm has erected a 'lift' between the lower and upper town: this is a decided boon to those who wish to avoid the long wooden staircase of 190 steps which gives access to the *Oberland*. The charge is only ten pfennigs—a little over a penny. On leaving the lift we step on to the terrace-walk, known as the Falm, which flanks the upper town. This is a most pleasant lounge on a fine day; leaning over the low parapet we look down upon *Unterland*, a maze of clean bright houses, small gardens, narrow alleys, and tree-tops; beyond these the pier and the bright-striped boats at their anchorage; further off, in the middle of the Sound, are the 'Freia' and the German gunboat 'Falke.' From this elevated spot an immense round of sea is visible—to-day it is purple along the outer circle, which in the middle distance passes into delicate shades of lavender and violet, in the foreground one broad belt of flashing emerald, streaked with narrow lines of lace-like foam over the shallows of Sand-insel—a fair and lovely scene as seen beneath an azure sky. Over the plants which grow along the cliff the Humming-bird Hawk-moths hang poised or dash erratically to and fro seeking the last-born blossom of the small convolvulus or cornbind. Many Small Tortoise-shell Butterflies dance in the sunshine, and the soft summer breeze is musical with twitterings of Martins hawking above the lower town. Following the terrace I turn up Trinity Street—passage it might more fitly be called—and presently am standing in Mr. Gätke's studio, exchanging hearty greetings. The well-remembered bird-cases are there on the walls, containing so many of the rare wanderers to the island, yet there have been considerable and rich additions since my former visit. What a remarkable collection is here brought together from all quarters, remarkable when we consider the great distances many of these wanderers have travelled, also from the large number of species represented.

Take, for instance, that case of Buntings; the Heligoland list includes seventeen species against nine known to have visited Great Britain, and there are sixteen of these represented in this one case. Following the arrangement and nomenclature of Mr. Dresser's

Naturalist,

'List of the Birds of the Western Palæarctic Region,' the Buntings included in the Heligoland avi-fauna are

1. **Emberiza melanocephala** Scop. Black-headed Bunting. About fifteen or twenty occurrences.
2. **Emberiza cinerea** Strickl. Strickland's Bunting. Once.
3. ***Emberiza luteola** Sparrm. Chestnut-headed Bunting. Twice seen in garden by Mr. Gätke—May and September—but not obtained. The example in the collection was not taken on the island.
4. **Emberiza miliaria** Linn. Common Bunting. An occasional visitor, but never common.
5. **Emberiza citrinella** Linn. Yellow Bunting. Common.
6. **Emberiza cirrus** Linn. Cirl Bunting. Two or three times.
7. **Emberiza hortulana** Linn. Ortolan. Common.
8. **Emberiza cia** Linn. Meadow Bunting. Two or three times.
9. **Emberiza cæsia** Cretzsch. Cretzschmar's Bunting. Twenty to thirty years ago, in spring, with S.E. winds—altogether then twenty or thirty occurrences.
10. **Emberiza leucocephala** Gmel. Pine Bunting. One very fine male in spring, taken in 'throstle-bush' in the garden.
11. **Emberiza aureola** Pall. Yellow-breasted Bunting. Two young males and one female.
12. **Emberiza rustica** Pall. Rustic Bunting. About ten times in the autumn, and once in spring—a female.
13. **Emberiza pusilla** Pall. Little Bunting. Forty to fifty occurrences.
14. **Emberiza schoeniclus** Linn. Reed Bunting. Common.
15. **Emberiza pyrrhuloides** Pall. Large-billed Reed Bunting. One, April 24th, 1879, an old male in the most perfect nuptial plumage.
16. **Calcarius lapponicus** Linn. Lapland Bunting. Rare in spring, two or three a day in the autumn.
17. **Plectrophanes nivalis** Linn. Snow Bunting. Common.

Emberiza chrysophrys Pall., the Yellow-browed Bunting, and *E. striolata* Licht., the Striped Bunting, have so far not yet been recognised at Heligoland.

Then again, take the case containing the *Phylloscopinæ*. Where in any other collection in Europe could we find, grouped together within the space of a few inches, local examples of *Phylloscopus superciliosus*, *P. proregulus*, *P. tristis*, *P. bonellii*, *P. borealis*, *P. nitidus*, and *P. viridanus*?

* Not included in Mr. Dresser's 'List of European Birds.'

The cases containing the Thrushes (I forget how many examples there are of *Turdus varius* alone). Larks, Wagtails, and Pipits are all equally remarkable in the number of species represented as well as the beauty of the specimens. To me, however, the most interesting spot on the island was the garden adjoining the house, for in this small but well-kept enclosure more rare stragglers have been either recognised or obtained than in any other spot in Europe, and Mr. Gätke has frequently remarked that he would willingly give up his present collection to possess the rare unrecognised migrants which from time to time have visited them. During my visit, however, it was dead low-water time, the autumn tide of migration having scarcely commenced to flow. There are flowers and not birds to look at—Heligoland roses are famous, but none we saw could compare with those in this garden—the blooms especially of Le France, Baroness Rothschild, and Souvenir de Malmaison being of extraordinary size and beauty. At the end of the garden farthest from the house is a cluster of elders and willows, which are used as a ‘throstle-bush,’ of which more later on: beyond the ‘throstle-bush’ is a path or open space, and then a row of rough-topped hawthorns against the boundary wall. It was in this ‘throstle-bush’ that Mr. Gätke took that beautiful Pine Bunting in his collection, and he was in the act of explaining to me his excitement in making the capture, when I happened to look into the thorns and saw sitting within a few feet of us a male Crossbill in the red plumage, and also a green female. Here, indeed, were some actual migrants worth seeing. Mr. Gätke said that about twenty to thirty a day had been coming in, and that I should probably find others in the neighbouring gardens, that it is a dull stupid bird, and their presence is readily recognised by their repeated call-notes. In these Oberland gardens and the grounds of Government House there is much good cover for birds, far more than appears from casual inspection.

Subsequently to my visit I received from Mr. Gätke two photographs of the garden, which are here reproduced, accompanied by the following explanatory notes:—‘In the willows to the left of the house, of the one view of the garden, Mr. Seeböhm failed to obtain *Phylloscopus superciliosus*, a female, on the 4th of October, 1876, and on the next day he succeeded in shooting a fine male in the topmost branches of the willows of the other photograph—in both instances I had seen the bird in the morning, and I was certain they would return ere long to the willows—a favourite haunt of this little leaf-warbler, as in fact of the whole of that family, particularly as they prefer *Salix smithiana*—which in consequence I always cultivate—

and scarcely ever do they resort to *S. caprea*, of which there are also some specimens in my garden.

'To the left of the high pole, in the view without the house, one day an *Emberiza rustica* perched from three to four feet above my head; a little further on, near the thin stick, where the white spots are, I caught that beautiful male of *E. pythiornis* you saw in my collection. Then, in the middle of the topmost branches, which are a little lower than those further to the right, Mr. Seebohm shot his *P. superciliosus*, and over the whole frame from left to right I have seen at least half a score more of these little darlings. The only time I heard its tiny call-note repeated more than once in short succession was one day when I came on a sudden on one so close that I actually made a grip at it with my hand and thereby frightened it out of its small wits. Further to the extreme right of the highest willow, *Turdus varius* and *T. fuscatus* have been caught. *Emberiza melanocephala* I have repeatedly shot with my walking-stick gun; the little English Redpole, *Linota rufescens*, as also *L. exilipes*, with spotless white rump and with a little bill. *Emberiza luteola* I met six to eight paces behind the spot where I caught *E. pythiornis*. Just a little further to the right, where the photograph ends, my son shot *Phylloscopus nitidus*, and I reported *E. melanocephala*, *Sturnus roseus*, *Phylloscopus tristis*. Was once within arm's length of *Sylvia fuscata* through the dried-up planking dividing my garden from my neighbour's. In the bushes underneath the flag of the other photograph I shot with walking-stick gun, *Phylloscopus viridanus*; saw ever so many *superciliosus*, several *tristis*—so well known by its call-note, resembling the cry of a very young chicken repeated four or five times in quick succession; *Sylvia melanocephala*, several *Sturnus roseus*, etc., etc.

The oldest tree on the island is a mulberry, so old that its aged limbs are supported with iron clamps and traces. This is in a garden near the church. Trees are fairly abundant both in the upper and lower town, those best suited to the sea-breezes and soil being the sycamore, elm, lime, pear, and cherry. The elm trees which flank the wooden staircase, also some trees in the garden of the Conversation House, may be fairly called timber; besides these there is an abundance of elder, thorn, lilac, syringa, willow, and the 'tea'-shrub. The gardens attached to the pleasant and clean-looking houses are bright with roses, petunias, splendid stocks, sweet-williams, and French valerian; the latter attracts numbers of migratory moths.

The upper town ends somewhat abruptly, and beyond this the island is an open elevated common, wind-swept and without tree or bush, forming a long and narrow triangle, flanked by cliffs 200 feet

in depth. This plateau is about three-quarters of a mile in length by a third of a mile in greatest breadth, with a gentle and continuous inclination from S.W. to N.E. I do not think it would be possible to get a cricket pitch on any part without a certainty of a long-driven ball going over the cliff into the sea. The common is divided in its greatest length by a broad footway, *Kartoffel-Allee*, or potato street; to right and left are the small potato plots, occasionally varied with a few oats—cut green for fodder for the ewes, and with spaces of short turf, on which the milk-ewes are tethered. There is not a cow or a horse on the island, and no wheeled conveyance above a hand-barrow.

The upper plateau is surrounded by a wire fence, the top wire spiked, which follows the cliff-line in and out. This is a favourite perching place for the small birds, as Chats, Titlarks, etc. During my stay, however, I did not see any immigrants excepting the Crossbills and a young Cuckoo flying in the street near the post-office. Wheatears, Chats, Pipits, Wagtails, Warblers, and Larks, none had yet arrived. Excepting the Guillemots, Sparrows, Starlings, and Martins, birds rarely nest on Heligoland; the Lark, Chaffinch, and Tree-pipit have nested, and also a pair of English Redpoles, in Mr. Gätke's garden, but the nest was destroyed by a cat.

The *Oberland* during my stay swarmed with White Butterflies and the Lesser Tortoise-shell, also a few Meadow Browns, settling perpetually on the blossoms of *Galium verum* and *Sisymbrium officinale*. These two plants, now in full bloom, gave the upper plateau the appearance of a mustard-field in flower. Other English weeds are the common thistle, field wound-wort, and cornbind.

The greater part of these Butterflies were immigrants from the nearest land, forty miles to the eastward. I saw several like flakes of snow drifting across the sea from this direction, and amongst them a single example of *Vanessa cardui*. We have only to see the collection of Lepidoptera and Coleoptera made by Mr. Gätke to recognise the fact that the migration of insects is here as remarkable as that of birds, but this is a chapter yet to be written.

Near to the signal station at the S.W. and highest corner of the island, and between there and the lighthouse are the 'throstle-bushes.' I counted six at a distance varying from 50 to 100 yards apart. A 'throstle-bush' may be either artificial or natural, like the growing shrubs in Mr. Gätke's garden. These, however, were all artificial, and consisted of a mass of thorns and sticks stuck upright in the ground, ten feet high and about fifteen in width, and four or five feet thick near the ground, gradually thinning to the top. The near side facing the east is left open, the far side and top are covered with a light net extending to within a foot of the ground, and there

fastened to small upright stakes ; from these extends in an horizontal direction the ground net, so arranged that when birds get in there is no getting out. On a migratory night flocks of various Thrushes rush headlong into these shelters—the only refuge on the bleak plateau that they can see before them, frightened by the glare of the lanterns and the beating of sticks, and finding egress impossible on the other side, they flutter down to pass beneath the ground net, from which there is no escape. These decoys are very effective, and immense numbers of migrants, even Hooded Crows, are captured from time to time.*

The flat shores of Sand-insel offer very considerable attractions to the migrating waders. The island is a cluster of sandhills with a short sandspit extending eastward, and a long and somewhat curved shingle beach to the west. The sea-grass and some slight barriers of brushwood, put down to check the drift of sand, afford but scanty protection to any land birds which may alight here. I only saw a solitary Thrush and a few Sanderlings, Redshanks, Grey Plover—the mere avant couriers of the great bird army so soon to appear. The sandhills swarmed with Grasshoppers, which are greedily gobbled up by a party of young Ducks. Near to the Dünnen pavillon there is a quantity of brushwood packed ‘on end’ (Lincolnshire—‘double-banded kids’) for repairing the sand-barriers during the winter. This was suggestive of future shelter for any number of Goldcrests or other small immigrants. At this season, however, at least during the greater part of the day, there is little privacy for any birds, as the island is occupied by bathers, and after the bath they sit or recline to the number of eight hundred or more in numerous picturesque groups on the long and narrow belt of shingle which stretches to the west, the bright-coloured wraps and sunshades of the ladies being somewhat suggestive of a bank of many-coloured flowers ; here for hours they remain reading or in conversation, sketch the island, perhaps, on some flat-sided pebble, or lazily watch the long rollers thundering to their feet. Like the Lotus-eaters,

They sat them down upon the yellow sand,
Between the sun and moon upon the shore :
And sweet it was to dream of Father-land,
Of child, and wife —

Only that in this case the sand is not yellow but white, and, when bathing the smallest shell or pebble is clearly visible in six feet of water.

* Mr. Gätke informs me that on the night of October 14th, in the present autumn, a Heligolander went to the north point of the island with a lantern and cudgel, and there killed seventy-five Hooded Crows roosting on the grass, part of a migratory flock which had come in during the evening.

Mr. Gätke, when describing to me, in his garden one afternoon, the migration of the Goldcrest, said, it might be on some still bright afternoon in October, suddenly from above a small bird drops into the shrubs, then another, then two or three, after which numbers keep dropping in, not only here, but into the neighbouring gardens. Some of these fragile-looking little wanderers commence feeding, or making a pretence to feed, others sleep, like dots of feathers amongst the shrubs. The sun has set and twilight deepens, a single planet shines like a distant lamp in space. Something tells them that it is time to move; half-an-hour after sunset one is seen to rise, flying directly upwards, wings and body being kept perpendicular to the plane of the horizon, like a small spread-eagle. A tiny note sounds out aloft, then one and then another rise; the notes are repeated, now from one, now from another, till the whole flock is called together and on the wing. Then, circling once or twice, they strike off into the gathering darkness towards the western isles.

In considering the phenomena of migration, due allowance must be made for the finer senses of the lower animals, their better remembrance of locality and stronger vision. It is easy to understand how birds with their acute sight, and migrating in the day time, may discern Heligoland from the nearest coast to the east, only forty miles away, and from Heligoland be able to see Borkum and then Ter Schelling, and the southward trend of the European coast-line. Yet in the night, when birds most migrate, these landmarks would be invisible, and in the great sea passage of 360 miles between Heligoland and England there are no landmarks to give even the general direction. There is the light of star or planet, and that these are an important factor in migration there can be no doubt, but to what extent stars and planets act as actual guiding points we shall never be able to tell, although we know that when the sky is obscured with heavy clouds or by fog, birds not unfrequently lose their way, and when the stars again become visible, or the moon rises, speedily appear to find the right course again.

It is known that in foggy thick weather migrating birds become much puzzled, and it is invariably under these adverse meteorological conditions that they are observed about light-houses or light-vessels, or clamorously careering above the lights of a town. The rays from a light-house or light-ship are not thrown upwards, but are directed to the horizon; consequently, on a foggy night, to birds passing some distance overhead the light from a light-vessel would appear as an illuminated circle, a spot where the fog seems less dense, or a little brighter than the surrounding gloom, more or less distinct according to the level of flight; a flock of migrating birds seeing this light

spot, perhaps with the idea they are over land, strike directly downwards—as it has been described at the light-vessels—as if descending perpendicularly through a funnel, and as they come within the plane of the reflectors will, we are told, dash to and fro erratically for hours round the lantern. Mr. Gätke thinks that this phenomenon of the circling flock, as his observations at Heligoland have shown, is more likely due to a continuous stream of birds constantly recruited from above, rather than the same flock flying for hours round the light, and that as soon as birds find out their mistake, after circling once or twice round the light, they pass forward again or rise to their former altitude.

Birds, indeed, do not appear to be attracted to bright lights in the same manner as moths, for these latter come on bright nights just as on dull; the former, as a rule, only in fogs, snowstorms, thick and obscure weather.

There is no doubt that the phenomena attending a migration of Gold-crests at Heligoland may be repeated at one and the same time at Borkum, Ter Schelling, and other stations on the European coast-line. Observations, as recorded in the migration reports, show that the Gold-crests, as well as other birds, do sometimes arrive on the British coasts in one broad front, which on the one side may touch the Shetlands, and on the other the Channel islands. The migratory movement is, however, not invariably a broad stream; as an illustration out of many, take that remarkable migration of the Honey Buzzard past Heligoland on Sept. 19th, some years since. Their course, Mr. Gätke told me, was nearly due E. and W., crossing the sandspit which stretches out north-east of Sand-insel. About noon, five to ten together; then gradually somewhat larger numbers at short intervals; then from three to six p.m. an almost interrupted stream, the rear of one lot almost mingling with the van of the next. It was a very fine September day, and so calm and still that spectators on the main island, distant three-quarters of a mile or more, thought they could distinguish the winnowing sound of the wings. This migration of the Honey Buzzard is the more remarkable from the fact that these birds are very solitary in their habits, nesting considerable distances apart, and that they are not often visible in the great woods and forests they mostly frequent. It is difficult to understand how so rapid a mobilisation of the species was effected over the vast area of their breeding range, as well as to understand the impelling cause which drove them westward in numbers sufficient to keep up a continuous stream of many hours past Heligoland.

I left this bright little island in the North Sea with regret—a regret apparently shared by many of my fellow-passengers, for long

after the 'Freia' was ploughing her way through green seas towards the Elbe, there passed the frequent wavings of handkerchiefs between friends on board and friends on shore. The Germans have, unfairly I always say, been called a stolid and cold-blooded race; they are certainly sufficiently demonstrative in their farewells. How soon, I thought, beneath the flutter of countless handkerchiefs and shouts of 'auf wiedersehen,' might the dark battalions once more march out to guard their frontiers; it may be the prelude of triumph to some, but assuredly it would be the commencement of a life-long sorrow to the many.

The return journey to Grimsby was altogether uneventful, only a few Herring Gulls being seen; and soon after leaving the Elbe, the body of a sailor drifted past—the very saddest sight since leaving home.

YORKSHIRE ENTOMOLOGICAL NOTES.

GEORGE T. PORRITT, F.L.S., F.E.S.,

Huddersfield; Author of the List of Yorkshire Lepidoptera, etc.

MR. S. L. MOSLEY informs me that a specimen of *Aplecta tinctoria* was found drying its wings, having just emerged from pupa, in Greenhead Park, Huddersfield, during the past season. A specimen at Edlington, Doncaster, is the only previously recorded occurrence in the county, and it is not unlikely that the pupa of the Huddersfield specimen was brought among the soil attached to the roots of some tree or plant introduced into the park. Other additions to the Huddersfield list are—*Depressaria badiella*, of which several specimens were taken at Grimescar by Mr. G. W. K. Crosland, and for which Redcar was the only previous Yorkshire locality; *Pedisa bilunana* and *Gelechia politella* I took in the Netherton Wood; this latter local northern species has also occurred in the greatest profusion at Greenfield both seasons since the one I first found it there in 1885. Additions for other localities are *Depressaria weirella* at York, a fine specimen of which I took off a ragwort bloom on the night of August 16th, when collecting in company with Mr. G. C. Dennis, thus adding another locality, it only being previously known in the county from Saltburn. And in the current number of the 'Entomologists' Monthly Magazine,' Mr. Eustace R. Bankes announces the finding, at the beginning of October last, of larvæ of *Nepticula tormentillæ* on *Potentilla tormentilla* on the West Riding moors. Mr. Stainton adds a note, suggesting that the species may possibly be, not *N. tormentillæ*, but the same as a specimen he bred from the same plant at Dunkeld twenty-seven years ago, and which is still without name. In either case the species is new to the county list.

A CURIOUS HABITAT OF SOME MOSSES.

CHAS. P. HOBKIRK, F.L.S.

Read in Section D, British Association, Manchester, September 7th, 1887; and afterwards at
Scottish Cryptogamic Society, October 1887.

As is probably well known amongst geologists the South-Western portion of the West Riding of Yorkshire is situated on the Lower Coal-Measure series of the Carboniferous formation. The numerous beds of coal of various thickness have been deposited, and are now found intercalated, amongst thick beds of sandstone, some very fine-, others coarse-grained, and these sandstone beds are extensively quarried in the district for the excellent building materials they supply.

It was in one of these quarries, situate at a Colliery called Hartley Bank, near Dewsbury, that the occurrence of this curious moss-habitat was observed. At the bottom of the quarry, which is some 30 ft. or 40 ft. below the normal surface of the hill-side in which it is excavated, are some deeper holes where blocks of stone have been taken out below the average level, and these have been filled up with water percolating through the cracks in the bedding of the rock. In one of these in which the water stood from a depth of 10 in. to 24 in., I observed, in June 1887, a peculiar looking moss which I could not recognise at first sight. It was growing perfectly upright in a loosely tufted manner and apparently rooted in the bottom of the pool; it rose up to within an inch or two of the surface, but all of it quite submerged. I rooted up a small tuft with a stick for examination and on putting some of it under the microscope I was very much surprised to find it was *Mnium hornum*. I at once sent off some specimens to Dr. Braithwaite of London and to Mr. Boswell of Oxford, who both confirmed my naming of the specimens, but Dr. Braithwaite was of opinion that it was merely a temporary aberration from the usual form caused by a temporary submergence. Mr. Boswell expressed great interest in such a curious circumstance as this purely terrestrial or aerial-growing moss being found submerged, and both gentlemen concurred in saying that it was the first time such a thing had come under their notice. On re-visiting the quarry a week or two later, I found on inquiry that it was no temporary or partial inundation that caused the existence of these pools, but that they had been filled with water for at least eight or ten years, and that even in the driest seasons the depth of the water never varied more than an inch or two. I then made a fresh gathering, of which, after having well washed it, for the tufts were coated with a diatomaceous

slime, I sent in its fresh state a fair quantity to Mr. Boswell by the same evening's post. Both of us were I think considerably surprised to find that this second gathering was not *Mnium hornum* but *Polytrichum commune*, and Mr. Boswell afterwards wrote me, that amongst some loose fragments he had found several bits of another moss—*Bryum* (*Webera*) *albicans*.

The tufts of *Polytrichum* are somewhat sparingly branched and much elongated and attenuated, and the leaves are more distantly placed on the stem, and the same may be said of the *Mnium*, but beyond this there does not appear to be any structural difference in either stem or leaves, between these specimens and the normal form. Both species also in several instances show distinct *innovations*, thus to my mind proving that they are not a single season's growth, as Dr. Braithwaite seemed at first inclined to believe, but that they must have passed two or more seasons in this unusual habitat, where to all appearance they both grow and flourish, in considerable quantity.

THE LEAFING OF THE OAK AND THE ASH.

C. P. HOBKIRK, F.L.S.

OLD superstitions die hard, and this old legend, celebrated in a doggrel couplet, seems to be one of them. There is about as much sense and about as much truth about it as in the somewhat similar superstition connected with St. Swithin's day being a prognostic of the state of the weather for the forty subsequent days.

I am not at all surprised that Mr. Hagger received so many unsatisfactory answers from farmers and others on this subject; it would have been surprising had it been otherwise. As Mr. Hagger says, the gist of them is no doubt conveyed in the second paragraph of his article, and that paragraph contains a full answer to the question. This answer may, perhaps, be put into a more concrete form even than he has there put it.

The only real and scientific reason and cause of the one tree or the other being in leaf earliest is the kind of weather that has *preceded* the leafing, not the weather that is yet to *succeed*. The amount of sunshine, warmth, and rain, or absence of sunshine, cold, frosty, and dry weather, will have their full effect in determining the time of leafing of these two or any other trees, and also according to the varied habits of these trees will determine priority of leafing, and this will also be affected by the kind of soil, shelter, or exposure

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of individual trees; but to suppose or believe for one moment that these should indicate anything of the *future* seasons is preposterous in the extreme, and this also seems to be the opinion, though not clearly expressed, of Mr. Hagger in his third paragraph. When I say not clearly expressed, I mean that it seems to me that Mr. Hagger is not quite convinced in his own mind as to the truth or otherwise of the legend; but I think that if we look the matter fairly in the face we shall arrive at the conclusion that the sum of the *environments* that *have been* at work is the cause of the times of leafing, and that there is no more scientific value to be ascribed to the couplet than to the St. Swithin's or any other similar weather forecast. The time of leafing is the effect of past causes, and not in any way a cause or even prognostication of future events.

NOTES—ORNITHOLOGY.

Crested Tit near Keighley.—A few weeks ago a person at Many-Wells expressed a wish that I should go and see what he described as a 'strange' bird, but thinking it would be—what such examples usually turn out to be—a common species, I neglected paying a visit. The bird in question is a Crested Tit (*Parus cristatus*), and was shot by a farm servant near Keighley about the first week in August, and brought to a local birdstuffer. This is the second recorded occurrence of this species in this district, the other having been shot, I believe, on Thornton Moor. Another bird, viz., the Green Sandpiper (*Helodromas ochropus*), which is an addition to our local avifauna, I saw on the 10th of September last flying about Many-Wells reservoir, in company with Redshanks (*Totanus calidris*), one of which had been wounded with a gun-shot. On calling the other day at Mr. Oliver's, the birdstuffer, into whose hands many a *rara avis* has fallen, I am sorry to add that the above bird (apparently an adult specimen) had been shot, and got into his possession.—E. P. P. BUTTERFIELD, Wilsden, Sept. 20th, 1887.

Flamborough Bird-notes.—The sea-birds at Flamborough have been far more numerous this season, and the number of eggs taken supersedes in quantity the take of all previous seasons. The other evening I had a very pleasant sail round the headland, and was struck to see so many thousands of Puffins (*Fratercula arctica*). Most of the Guillemots (*Lomvia troile*) and Razorbills (*Alca torda*) with their young have taken their departure. The Puffins all round the Robin Lythe Hole and neighbouring rock when on wing darkened the air. The Sea Swallows, Skuas, Manx Shearwater (*Puffinus anglorum*), also the Sandwich Terns (*Sterna cantiaca*) have made their appearance. Manx Shearwaters have arrived in great numbers.—MATTHEW BAILEY, August 10th. 1887.

Flamborough Bird-notes.—Perhaps it might be of interest to know that the sea-birds, Guillemot (*Lomvia troile*), Razor-bills (*Alca torda*), Puffins (*Fratercula arctica*), Kittiwakes (*Rissa tridactyla*), etc., etc., on our coast increase every year. I am sure that naturalists would be astonished to see the quantities of Skuas, Little Gulls (*Larus minutus*), and Shearwaters. Fulmar Petrels (*Fulmarus glacialis*) have been seen, and one shot; also one immature Sabin's Gull (*Larus sabini*), and the Grey Phalarope (*Phalaropus fulicarius*). Several winter visitants have already arrived on our coast I believe. The Hooded Crow (*Corvus cornix*) was the first to arrive, September 1st, Crested Wrens (*Regulus cristatus*) and Ring Ousels (*Turdus torquatus*) following. Yesterday several Woodcocks (*Scolopax rusticula*) were shot on the headland; unfortunately they have brought with them very rough weather.—MATTHEW BAILEY, Flamborough, October 11th, 1887.

SAUNDERS' 'LIST OF BRITISH BIRDS.'

A 'List of British Birds,' revised to April 1887, by Howard Saunders, F.L.S., F.Z.S., etc. London: Gurney & Jackson, successors to Mr. Van Voorst, 1887.

A LIST of British Birds by a recognised authority on the subject has, we venture to say, long been a desideratum. True it is that Wharton's useful list has for some years occupied the field in this particular department of ornithological literature, but it was open to considerable improvement, among others in respect of the classification employed. No doubt Sundevall's system has many virtues, but as a whole we confess we never became really familiar with it, and consequently had almost invariably to refer to the index to species—happily supplied.

The chief requirements in a list of this description are, we take it, as follows:—

(1st) That it shall be an authority as to what species are to be truly considered British.

(2nd) That it shall be based upon all that is recognised as soundest and best as regards the important question of *Classification*.

(3rd) That its *Nomenclature* shall be in accord with the recognised laws of priority—the only true method by which we can eventually hope to arrive at the much-to-be-desired uniformity both at home and abroad.

(4th) That the list shall be handsome and suitable as regards its typography.

Regarding the fulfilment of the first three—the most important—of these desiderata, the measure of success achieved depends entirely upon the author selected for the task, and in this respect all of us must recognise that the choice was a most happy one, for it would have been indeed a difficult matter to have made one more suitable than that of the gentleman so well known to ornithologists for his varied and useful bird-work, and particularly in our present special connection as the successful editor of Volumes III and IV of the standard work on our avifauna—Yarrell's 'British Birds.' But while it is a pleasure to recognise that the all-important conditions have been fulfilled in a manner that leaves little—indeed, if a few of the square brackets were removed we should say absolutely nothing—to be desired; yet as regards the typography it is quite otherwise. In this respect it does not come up to our ideal of what the typography of such a list should be, and indeed it is not too much to say that in this respect it is weak. Apart from this defect, which we fully admit is of quite secondary moment and entirely a matter of taste, this is from its general excellence facile princeps among lists of British Birds.

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THE YORKSHIRE BOULDER COMMITTEE AND ITS FIRST YEAR'S WORK.

S. A. ADAMSON, F.G.S.,
Hon. Secretary to the Committee.

THE above Committee has now successfully completed the first year of its operations, and has duly presented a report of the same to the Boulder Committee of the British Association. This was approved of and presented by Dr. Crosskey in the Geological Section at the recent meeting of the British Association in Manchester. In the preliminary remarks of the report of the British Association Committee, they state—‘ We have been greatly assisted by the formation of a Boulder Committee in connection with the Yorkshire Naturalists’ Union, of which Professor Green, F.R.S., is President, and Mr. S. A. Adamson, F.G.S., the Hon. Sec. Were a similar committee organised in each county, the work of the Committee of the Association could soon be brought to a satisfactory conclusion.’ As some evidence of the success the Yorkshire Committee has achieved, it may be stated that the Boulder Committee of the British Association has been in existence fifteen years; in all this period only seven reports had been presented upon erratics in Yorkshire. This shows conclusively how haphazard, or, as may be termed, accidental, the character of the previous work had been. Now, when the work has been properly organised by a Yorkshire Committee, in the first year of its operations seven reports, embracing boulders or groups of boulders in fifteen different localities, have been accepted by the British Association and printed in their report for 1887, whilst several other valuable reports have been deferred, and, in addition, the new reports already received for the second year’s work are still more numerous. The Committee desire to thank most warmly the gentlemen who have forwarded reports, for their esteemed and valuable co-operation, and would still further press upon them—and, indeed, upon all Yorkshire geologists and scientific societies—for their continued efforts, until the county is exhaustively reported and the glacial map of Yorkshire completed. As this is the first report of the Committee, it may be well to relate in a brief manner its origin and history before giving details of its accomplished work. A meeting of Yorkshire geologists was held at the Leeds Mechanics’ Institution on Nov. 23rd, 1886, when a resolution was passed, establishing a committee to receive reports and conduct observations relative to the erratic blocks of Yorkshire. At a meeting of the Executive of

the Yorkshire Naturalists' Union, held four days later, this resolution was unanimously confirmed. The Boulder Committee being now in actual existence, its first meeting was held on Dec. 23rd, 1886, when a draft schedule upon which to record observations was submitted and adopted. A copy of this schedule was given in *The Naturalist* for May 1887. Upon the 1st Jan., 1887, this schedule was issued to Yorkshire geologists and to each society affiliated with the Union, with the satisfactory results before alluded to. The detailed reports comprised in the first year's work of the Committee are now presented.

THE 'GREYSTONE,' LEEDS.

C. D. HARDCASTLE,

President of the Leeds Geological Association.

Situated in Parish of Leeds, one mile from the town, on the side of the old highway to Bradford, opposite the northern end of Ventnor Street, on property belonging to the 'Pious Use Trust.' Only 6 in. in height, is now exposed above the causeway, and it projects 6 in. from a garden wall which is built over it. The base of the exposed segment along the flags measures 2 ft. 10 in. Old inhabitants say it was formerly from 4 ft. to 5 ft. above ground, and from 3 ft. to 4 ft. in diameter, but of irregular form. Its entire length is perhaps 7 ft. or 8 ft. Thoresby, in 1715, calls it 'a prodigious great stone.' Probably originally nearly rectangular. There are indentations in the stone, but not natural. Millstone Grit, similar to that of Horsforth and Bramley Fall. The Rough Rock of Horsforth is about four miles distant on the same side of the river, and at a considerable elevation, some of the quarries being about 475 ft. above the sea. The stone has probably come from there. Bramley is about three miles away, on the opposite side of the river, and at an elevation of 200 feet. The Greystone legend is that a huge giant hurled it from the Giant's Hill at Armley, about half a mile distant on the opposite side of the river: in proof of which statement the indentations of the giant's thumb and fingers are still to be seen. The Giant's Hill, however, belongs to the Flagstone Series of the Lower Coal Measures, whereas the 'Greystone' is Millstone Grit. 115 ft. above sea-level. On the 6 in. Ordnance Map—Lat. $53^{\circ} 48' 40''$, Long. $1^{\circ} 34'$ —as 'Greystone.' An ancient boundary stone. Has served from time immemorial as boundary stone separating the manors of Leeds and Burley. Thoresby, in 1715, quotes an old MS. survey, N.D. (*Lapis cinereus ingentis magnitudinis admodum antiquitatis et vetustatus existens*) = The Greystone of great size, very

ancient and existing beyond memory). It rests upon yellow clay from 8 ft. to 9 ft. in thickness, below which there is Coal Measure Shale.

NOTE.—According to Thoresby, there was an old boundary stone called the Paudmire Stone, in Leeds main street (Briggate), similar to this boulder. This memorable stone was purposely sunk below the pavement as a supposed nuisance when that part was newly paved in the mayoralty of Mr. Samuel Hey (1703). The two stones are in a direct line with the Rough Rock of Horsforth, which is to the N.W.

NOTES ON FLAMBOROUGH HEAD BOULDERS.

REV. E. MAULE COLE, M.A.,

Wetwang; President of the Geological Section of the Yorkshire Naturalists' Union.

An immense number of boulders have been lodged on the top of Flamborough Head. On Beacon Hill are half a dozen of great size, mostly rounded, consisting of Granite, Whinstone, Sandstone, and Mica Schist with Garnets. These have probably been placed in their present position, but not moved far, as a neighbouring small ravine, called Hartindale Gutter, reveals the fact that the boulder clay in this locality is full of large boulders. On the neighbouring side of the ravine leading down to Thornwick Bay there is a boulder of Cherty Limestone lying on the surface, which measures 65 in. long \times 52 in. broad and about 20 in. high.

A rounded boulder of Sandstone, 32 in. \times 21 in. \times 14 in., projects in the side of the same ravine.

On Cliff Lane, Bempton, by the side of the road, is a group of eight large Whinstone boulders, more or less rounded, which were removed from the adjoining fields to their present position more than seventy years ago. The average size is 40 in. \times 40 in. \times 20 in.

In the village of Bempton, by the blacksmith's shop, lies a Whinstone boulder, 56 in. \times 24 in. \times 18 in., and numerous others are visible in all directions.

REPORTS UPON ERRATIC BLOCKS IN THE NORTH RIDING OF YORKSHIRE.

WM. GREGSON,

Baldersby, Thirsk; Hon. Local Sec. Yorkshire Geological and Polytechnic Society.

CATTERSTY SANDS, SKINNINGROVE.

Three miles S.E. of Saltburn.

Grey Granite—diameter, 3 ft.; rounded; no striations. Rests upon Lower Lias Shales, on the shore.

WHORLTON.

Eight miles N.E. of Northallerton.

Grey Granite—diameter, 3 ft.: sub-angular: is striated. Rests upon Lias, 250 ft. above sea-level.

BALDERSBY PARK.

Five miles S.W. of Thirsk.

Millstone Grit—6 ft. \times 3 ft.: angular: no striations. Rests on an outlier of Lower Lias, 90 ft. above sea-level.

ELMIRE.

Six miles S. of Thirsk.

Shap Granite—diameter, 2 ft.: sub-angular: no striations. Rests on Keuper Sandstone, overlaid by gravel, 60 ft. above sea-level.

MILL BECK, ROBIN HOOD'S BAY—(3 BOULDERS).

Ten miles N. of Scarborough.

Shap Granite—height, 2 ft.: circumference, 9 ft.: sub-angular: no striations. Rests on Lower Lias on the shore.

Shap Granite—height, 1 ft.: circumference, $7\frac{1}{2}$ ft.: sub-angular: no striations. Rests on Lower Lias on the shore.

Shap Granite—height and circumference and other circumstances exactly similar to the last-named.

HUTTON MOOR.

Three miles N.E. of Ripon.

There are a good number of erratic boulders scattered over this moor, from 1 ft. to 3 ft. in diameter, a few of which are of Grey Granite, the remainder being chiefly Millstone Grit. They all rest on the Keuper Sandstone.

LOW FIELD, NEAR PIERCEBRIDGE.

R. TAYLOR MANSON, M.R.C.S.,

Danby Grammar.

Low Field is three-quarters of a mile west of Cliffe Hall, near Piercebridge, on the Yorkshire side of the Tees. The boulder is in the hedge-side on the east side of the Field, about 200 yards from the river. It is about 70 ft. above the river: 10 ft. long on front face; 7 ft. 4 in. from front to back. The boulder is sunk in the ground considerably: portion visible 4 ft. above soil. Sub-angular: rounded top. Long shaped—longest axis N. to S. No groovings: it may identify the boulder that an attempt has evidently been made to break it: holes have been cut in it with chisels. It is Shap Fell

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Granite, and is 250 ft. above sea-level. Isolated; some beds of gravel not far off. Embedded, I think, deeply in the soil, which is heavy clay.

NOTE.—Another smaller boulder is lying to the left of the walk leading to Cliffe Hall, about a mile west of the other. It is rounded, and about 3 ft. long, with long axis E. and W. It has probably been moved by those who made the path near which it lies.

THE 'STRANGER'S STONE,' NEAR BARNARD CASTLE.

R. TAYLOR MANSON, M.R.C.S.

It is on the bank of Deepdale Beck, a small stream running into the Tees from the Yorkshire side, a little above Barnard Castle. I should think the stone is a mile up the stream from where it flows into the Tees. It is on the north bank. It stands about 8 ft. high, and has a circumference of 22 ft. None of it is embedded. It stands on a flat bed of rock at the edge of the stream. It is semi-oval in shape as seen from the land side; from the bed of the river, its outline is that of a blunted plough-share. It is smoothed. It is long-shaped, longest axis N.E. and S.W. This boulder may have been situated on the higher ground above the river and been sent crashing down to where it is. This supposition is founded on the fact that on the south-end face are seen two holes filled with lead, as if for insertion of iron hinge-hooks for a gate. I don't know any reason why three holes should have been drilled and filled with the block in its present position, as the gate or whatever was attached would hang over the river. No groovings upon it. It is Shap Fell Granite, and is known as the 'Stranger's Stone,' which may be a corruption of the 'Strange Stone,' alluding to the peculiarity of its differing from others in mineral character. Near it is a board with the following painted inscription:—

Pray whence com'st thou, a stranger in the land?
 What stopped thy progress in this pleasant dale?
 Wert thou from Shap, and brought by fairy hand,
 As felspar crystals mark thee from that Fell?
 How cam'st thou here—what bore thee on thy way?
 Wert thou by water or by glacier driven?
 I'm now thy lord, and here thou long shall stay,
 To raise our thoughts and praise the God of Heaven.

It is 550 ft. above sea-level. It is isolated, but other smaller blocks are observable in the river bed. It rests on Mountain Limestone forming the bed of the river.

SADBERGE, NEAR DARLINGTON (COUNTY OF DURHAM).

R. TAYLOR MANSON, M.R.C.S.

In village of Sadberge, three miles N.E. of Darlington. The boulder was found in Glacial Clay while excavations were being made for a reservoir. About 6 ft. 6 in. long, 4 ft. high; estimated weight, four tons. It is a wedge-shaped mass. The boulder is long shaped, and has been moved. On what has originally been the base of the boulder there are innumerable striæ in the direction of the longer axis, and all parallel to one another. So far as I could ascertain (the incrustations of clay have not been removed) there were none of the crossings of striæ so generally seen. The striæ are confined to the original base. The rest of the surfaces are irregular and angular. The rock is a compact Encrinital Blue Limestone, one of the Yoredale rocks, probably from Upper Teesdale, and is 218 ft. above sea-level. Too recently discovered for any legend, but no doubt traditions will gather round it, as it will be known in the future as the 'Jubilee Stone.' Her Majesty is Countess of Sadberge, and the inhabitants of the village determined that one part of their Jubilee proceedings should be the dedication of this large boulder. It was removed from the excavation where it had been found to the village green, and on Jubilee Day a service was held in the village church. A procession from the church was then formed, escorted by a troop of Yeomanry. An address on the history of Sadberge was given by the Rev. J. W. Baron, the stone was unveiled, and a feu de joie fired over it by the Hussars.

THE 'BULMER'S STONE,' DARLINGTON (COUNTY OF DURHAM).

R. TAYLOR MANSON, M.R.C.S.

It is on the west side of Northgate, at the edge of the flagged pavement, opposite some old cottages, to which it is claimed as an appurtenance. Nearly opposite the west end of Garden Street, Darlington, on the Ordnance Map. By compass circumference, N. and S., 13 ft. 5 in.; ditto, E. and W., 12 ft. 8 in.; horizontal circumference ($1\frac{1}{2}$ ft. from ground), 13 ft. 5 in.; height from ground, 3 ft. All portions visible are rounded. It has been moved. No groovings, but some fractured surfaces smoothed. It is Shap Fell Granite. It is known as 'Bulmer's Stone' from old Willy Bulmer, who, during the excitement of the Peninsular wars, used to perch on it and read the newspapers aloud to the neighbours. I do not know the origin or age of—

In Darnton toun ther is a stane,
 And most strange is yt to tell,
 That yt turnes nine times round
 When yt heares ye clock strike twell.

It is 157 ft. above sea-level, and is marked on the 25-in. Ordnance Map. It is well shown on a photo of Northgate to be had from Wood, picture dealer, Darlington. It is isolated, but there is both gravel and sand in the immediate neighbourhood. I believe that it rests on Glacial red clay, but the clay, sand, and gravel are irregularly distributed through the town. I think it is red clay there.

NOTE.—I have found Shap Fell granite several times in the bed of the Tees, at Piercebridge and at Low Coniscliffe. Have never observed it in the Wear, or rather that portion of it down to Bishop Auckland.

NOTES ON SHAP GRANITE BOULDERS AT SCARBOROUGH.

FORWARDED BY JOHN H. PHILLIPS,
Hon. Sec. Philosophical and Archaeological Society, Scarborough.

There are very few boulders in the neighbourhood to be met with. They have been broken up for road metal and for repairing walls, etc. There is a fine specimen in Mr. Read's garden, The Valley, Scarborough, about 4 ft. high, 3 ft. wide, and 12 in. or 14 in. in thickness. It was found on the beach, embedded in sand, when the foreshore was made, about six years ago. In an old disused shrubbery and plantation belonging to the family of Mr. Wharton, in King Street, Scarborough, are upwards of twenty boulders, hunted up in the neighbourhood, chiefly on sea-beaches at Cloughton, Burniston, Hayburn Wyke, etc., by the late Mr. Wharton, forty or fifty years ago. The largest is about 11 ft. in circumference and 4 ft. in height, rounded like a cone. There are no striations upon any of them, and apparently they have been laid on the sea-beach a great length of time, and subject to the wear and tear of the ocean, so that they resemble rolled stones, rounded by attrition. All the preceding examples are Shap Granite.

NOTE UPON THE 'HITCHING STONE,' KEIGHLEY MOOR.

By the British Association Boulder Committee—Dr. H. W. CROSSKEY, Hon. Sec.

This huge block of Millstone Grit was described to the British Association Committee by Mr. E. G. Spencer in 1874, as a 'boulder,' and the details concerning it will be found in the Report of the British Association for that year, p. 196.

A few years subsequently, Mr. J. R. Dakyns, of the Geological Survey, stated, in a letter to the Geological Magazine, that 'in his opinion it is not a boulder,' and that 'it has no single characteristic of a boulder about it. It is not rounded or scratched, nor is it standing on end, nor in any such a way as to raise a suspicion of its having been removed.'

The Leeds Geological Association has, during the past year, thoroughly investigated the subject, and the secretary (Mr. Adamson) has described the results in a paper, published in *The Naturalist*, November 1886, p. 333, and also in the Transactions of the Leeds Geological Association, 1886, part 2.

In these papers clear and satisfactory reasons are given in confirmation of Mr. Dakyns' opinion. The 'Hitching Stone' cannot be regarded as an erratic, but is a portion of the 'Rough Rock,' which originally covered these moors, and in situ.

Valuable reports upon the Norber boulders, by Mr. J. W. Davis, F.G.S., and upon erratics near Barnsley, by Mr. Hemingway, have been deferred. The second year's work of the Committee already comprises reports upon erratics at Bempton, Filey, Guisborough, Lindholme, Kirkby Underdale, Ingleton, Speeton, Seamer, Saltburn, Gristhorpe, Grosmont, Sleights, etc. Mr. G. W. Lamplugh is also engaged upon an exhaustive account of the boulders on the Yorkshire coast between Bridlington and Flamborough. The hon. secretary (Mr. Adamson, F.G.S., 52, Wellclose Terrace, Leeds) will gladly forward, upon application, schedules upon which to record observations, or give any information respecting the work of the Committee and the results desired.

NOTE—FISHES.

Three-bearded Rockling in the North Sea.—*Motella tricirrata* (Bl.). I obtained a very fine example to-day, from the pontoon at Grimsby, of what appears to be the deep-sea form of this fish, the *M. maculata* or Spotted Rockling of Dr. Günther. It was taken in a trawl-net between Flamborough and the Dogger. The length is $10\frac{1}{2}$ in., girth just behind the pectoral fin $7\frac{3}{8}$ in. In the fresh fish the colours are very beautiful, graduating from light olive or olive-buff above to orange below; the latter colour much brighter on gill-covers and cheeks; belly, whitish. The upper parts closely spotted with large hair-brown spots, both round and irregular in shape, but each spot distinct and separate, and not confluent or banded. These spots are very regular in a line on each side along the back and root of the dorsal fin as far as the tail, and below are more thinly dispersed, only a few extending to below the lateral line. The anterior portion of the back, also the upper surface of the head, is more thickly spotted than the posterior. There is an irregular line of large brown spots on and along the dorsal fin, the pectorals have also each three spots, and across the root end of the tail is a band-like line of lesser spots. The three barbs and edges of the fins, brilliant red; eyes prominent, with pupils black, and iris shading golden. The colours fade soon after death.—JOHN CORDEAUX, Great Cotes, Ulceby, December 19th, 1887.

Naturalist,

THE LICHENS OF WESTMORLAND.

JOSEPH A. MARTINDALE,
Staveley, near Kendal, Westmorland.

XXXIII. LOBARINA Nyl.

122. **Lobarina scrobiculata** (Scop.); Nyl. in Flora, 1877, p. 233; *Sticta* Nyl., Syn., i, p. 353; *Stictina* Leighton, Lich. Flora, p. 110.

On trees. Not common. Naddle Forest, Mardale, and near Staveley.

The plants are all very small, and poorly developed.

XXXIV. RICASOLIA (D.N.) Nyl.

123. **Ricasolia glomulifera** (Lightft.); Nyl., Syn., i, p. 368; *R. amplissima* Leighton, Lich. Flora, p. 112.

On trees. Curwens Island, Windermere, and in Lowther and Levens Parks.

The specimens from Lowther Park are very fine, but barren.

124. **Ricasolia herbacea** (Huds., Fl. Angl., p. 544); Nyl., Syn., i, p. 639; *R. latevirens* Leighton, Lich. Flora, p. 113.

On trees. Levens Park, near Ambleside, Mardale, Lowther Park.

Tribe XIV. PELTIGEREI Nyl.

Sub-tribe I. PELTIDEI Nyl.

XXXV. PELTIDEA (Ach.) Nyl.

125. **Peltidea apthosa** (L., Sp. Plant., No. 46); Ach., Syn., p. 238; *Peltigera* Nyl., Syn., i, p. 322, tab. viii, fig. 38; Leighton, Lich. Flora, p. 101.

On the ground. Not common. Scandale, Mardale, Kentmere, near Staveley, Sandside.

XXXVI. SOLORINA Ach.

126. **Solorina saccata** (L., Fl. Suec., No. 1102); Ach., Syn., p. 8; Nyl., Syn., i, p. 330, tab. viii, fig. 41; Leighton, Lich. Flora, p. 106.

On earth in the limestone districts. Abundant on Kendal Fell, Whitbarrow, Sandside. On Coniston limestone near Kentmere Hall.

127. **Solorina spongiosa** (Sm., E. Bot., tab. 1374); Nyl., Syn., i, p. 351 (as variety of *S. saccata*); *S. limbata* Leighton, Lich. Flora, p. 107.

On the ground near the mouth of the Kent.

Sub-tribe II. PELTIGERINEI Nyl.

XXXVII. NEPHROMIUM Nyl.

128. *Nephromium lævigatum* (Ach., Syn., p. 242); Nyl., Syn., i, p. 320; Leighton, Lich. Flora, p. 99.

VAR. *parile* (Ach., Prod., p. 164); Nyl., Syn., i, p. 320; Leighton, Lich. Flora, p. 99.

On shady moist rocks. Pugh Crag, Kentmere.

129. *Nephromium lusitanicum* (Schär., En., p. 323); Leighton, Lich. Flora, p. 100.

On trees and mossy rocks. Not very common. Mardale, Pugh Crag, Kentmere, Curwens Island, Windermere.

XXXVIII. PELTIGERA (Hffm.) Nyl.

130. *Peltigera malacea* (Ach., Syn., p. 240); Nyl., Syn., i, p. 323; Leighton, Lich. Flora, p. 102.

On mossy walls. Hundhow, near Staveley, and near Rydal.

131. *Peltigera canina* (L., Sp. Plant., No. 48); Nyl., Syn., i, p. 324; Leighton, Lich. Flora, p. 101.

On the ground, on trees, and mossy walls. Common throughout the county.

132. *Peltigera rufescens* (Necker, Meth. Musc., p. 79); Hffm., D. Flora, p. 107; Nyl., Syn., i, p. 324; Leighton, Lich. Flora, p. 102.

On mossy walls. Burneside Lane, near Staveley.

133. *Peltigera polydactyla* (Necker, Meth. Musc., p. 85); Hffm., D. Flora, p. 106; Nyl., Syn., i, p. 326; Leighton, Lich. Flora, p. 103.

On mossy walls. Not common. Near Staveley.

134. *Peltigera scutata* (Dicks., Pl. Crypt., Fasc. iii, p. 18); Leighton, Lich. Flora, p. 104.

I have not gathered this plant myself, but it is recorded in Leighton's Flora as having been found in the county by Sir J. E. Smith.

135. *Peltigera horizontalis* (L., Mant., ii, p. 132); Nyl., Syn., i, p. 327; Leighton, Lich. Flora, p. 104.

On rocks and walls. Very fine near Kentmere Hall and near Staveley.

Tribe XV. PHYSCIEI Nyl.

XXXIX. PHYSCIA (Schreb.) Nyl.

136. *Physcia parietina* (L., Sp. Plant., No. 25); Nyl., Syn., i, p. 410; Leight., Lich. Flora, p. 131.

On walls, trees, and roofs of houses. Common everywhere, especially on farm-buildings.

VAR. **aureola** (Ach.).

Kendal, Heversham.

VAR. **ectanea** (Ach.).

On rocks at Sandside and Arnside.

137. **Physcia polycarpa** (Ehrh., Exs., 136); Nyl., Syn., i, p. 411; Leighton, Lich. Flora, p. 133 (both as a variety of *Ph. parietina*).

On trees, wood, and walls. Not common. Near Milnthorpe, near Cliburn, and in Lowther Park.

138. **Physcia lychnea** (Ach., Meth., p. 187); Nyl., Syn., i, p. 411; Leighton, Lich. Flora, p. 132 (both as a variety of *Ph. parietina*).

On trees. Rare. Lowther Park.

139. **Physcia ciliaris** (L., Sp. Plant., No. 28); Nyl., Syn., i, p. 414; Leighton, Lich. Flora, p. 133.

On trees. Not common. Levens Park, near Sizergh Castle, Lowther Park, where it is more abundant than in other parts of the county; near Staveley (saxicolous).

140. **Physcia pulverulenta** (Schreb., Spicileg. Fl. Lipsicæ, p. 128); Nyl., Syn., i, p. 419 (excl. varr.); Leighton, Lich. Flora, p. 135 (excl. varr.).

Common on trees, less frequent on walls and rocks. Levens Park, Lowther Park, Ambleside, Staveley, Sandside.

141. ***Physcia pityrea** (Ach., Prod., p. 124); Nyl., Syn., i, p. 420; Leighton, Lich. Flora, p. 135 (both as var. of *Ph. pulverulenta*).

On trees. Not common. Near Barton and in Lowther Park.

142. **Physcia deterosa** Nyl., Syn., i, p. 420, as var. of *P. pulverulenta*

On trees. Abundant in Lowther Park, but barren.

143. **Physcia subdeterosa** Nyl. in Flora, 1878, p. 344, note.

On trees. Lowther Park, but not so abundant as the preceding.

144. **Physcia venusta** (Ach., Meth., p. 211, tab. viii, fig. 5); Nyl., Syn., i, p. 421; Leighton, Lich. Flora, p. 136, as a form of *Ph. pulverulenta*.

On trees. Levens Park.

145. **Physcia aquila** (Ach., Prod., p. 109); Nyl., Syn., i, p. 422; Leighton, Lich. Flora, p. 142.

At Elph How, near Staveley. This plant is essentially a maritime species, and therefore, seeing it does not occur on

the short piece of Westmorland coast, it is rather remarkable that it should be found inland. Perhaps the coast rocks being of limestone may have something to do with its absence there. Although especially a dweller by the sea, it has been gathered at great distances from the coast, as, for instance, among the Cevennes in France and the Himalayas in India (vide Nyl., l.c.).

146. **Physcia stellaris** (L., Sp. Plant., No. 27); Nyl., Syn., i. p. 424, p. pte.; Leighton, Lich. Flora, p. 140, p. pte.

On trees. Kentmere, Troutbeck. The type is somewhat uncommon, but the var. *leptalea* (Ach., Meth., p. 198) is widely distributed on rocks and stones.

147. ***Physcia tenella** (Scop.); Nyl., Syn., i, p. 426; Leighton, Lich. Flora, p. 141 (both as var. of *Ph. stellaris*).

On trees and stones. Generally distributed and abundant.

148. **Physcia aipolia** (Ach., Prod., p. 112); Stizb., Lich. Helv., p. 73; *Physcia stellaris*, p. pte., Nyl., Syn., i, p. 424.

On trees. Lowther Park and Levens Park.

149. **Physcia tribacia** (Ach., L. U., p. 415; Syn., p. 191); Nyl., Syn., i, p. 425, as a form of *stellaris*; *Ph. erosa* (Borr.) Leighton, Lich. Flora, p. 139.

On mossy walls. Common.

Mr. Crombie, in his Index Lichenum Britannicorum, Grevillea, vol. xv, p. 78, keeps *Ph. erosa* (Borr.) distinct from *Ph. tribacia* (Ach.); but according to Dr. Nylander (in litt.) there is no difference between them.

150. **Physcia cæsitia** Nyl. in Norrlin, Lapp., 326.

On walls at Staveley, abundantly. Probably common.

These plants have a somewhat different appearance from specimens of *Ph. cæsitia* kindly communicated by Dr. Arnold, of Munich, the laciniae of the Staveley plants being considerably narrower; but they are identical with specimens from New Galloway, gathered by Mr. McAndrew, and which were named by Dr. Nylander. The reaction with K. is the same in all.

151. **Physcia cæsia** (Hffm., En., p. 65, tab. xii, fig. 1); Nyl., Syn., i, p. 426; Leighton, Lich. Flora, p. 141, as var. of *Ph. stellaris*.

On stone walls, here and there. Not very common. In several places near Staveley.

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BOOKS RECEIVED.

Journal of New York Micro. Soc., vol. iv, No. 1, January 1888. [The Society.
The Essex Naturalist, No. 12, December 1887. [The Essex Field Club.

Journal of Microscopy and Natural Science, New Series, vol. i, Part 1, Jan. 1888.
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The Young Naturalist, Part xcvi, Jan. 1888. [Mr. J. E. Robson, Editor.

Scientific News for General Readers, vol. i, No. 1 (New Series) Friday, Jan. 6, 1888.
[Editor.

The Scottish Naturalist, No. xix, Jan. 1888. Prof. Trail, Editor.

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Wesley Naturalist, No. 11, January 1888. [The Wesley Scientific Society.

The Naturalists' Monthly, Nos. 3, 4, 5, Nov., Dec. 1887, and Jan. 1888.
[Mr. Walter Scott, Publisher.

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152. **Physcia obscura** (Ehrh., Exs., 177); Nyl., Syn., i, p. 427; Leighton, Lich. Flora, p. 136.

On trees. Lowther Park, Levens Park, and near Kendal.

VAR. **virella** (Ach.).

On trees and walls near Kendal and near Shap.

153. **Physcia adglutinata** (Flk.); Nyl., Syn., i., p. 428; Leighton, Lich. Flora, p. 137.

On trees. Levens Park, and near Sizergh Castle.

Tribe XVI. GYROPHOREI Nyl.

XL. **UMBILICARIA** (Hffm.) Nyl.

154. **Umbilicaria pustulata** (L., Sp. Plant., No. 52); Nyl., Syn., ii, 4; Leighton, Lich. Flora, p. 143.

On rocks. The Crag, Crook; and on Ulpha Crag. In considerable abundance at both places, but barren.

XLI. **GYROPHORA** (Ach.) Nyl.

The species of this genus are by no means well represented in Lake Westmorland, and in this respect the flora of this part of the county compares unfavourably with that of the higher part of Teesdale at Cronkley Scar and Falcon Clints. On most of the higher passes and mountains, the rocks bear a few straggling and poorly-developed plants of *G. cylindrica*, in some places accompanied by *G. erosa*, in others by *G. polyphylla*; but they are nowhere abundant, while as specimens their development leaves much to be desired. *G. proboscidea* occurs on Cross Fell, and will most probably be found on the Westmorland portion of the Pennines, but I have not met with it among the lake mountains of the county.

155. **Gyrophora cylindrica** (L., Sp. Plant., No. 29); Nyl., Syn., ii, p. 13; Leighton, Lich. Flora, p. 148.

On rocks. Helvellyn, Striding Edge, near Red Tarn, Red Screes, Little Hart Crag, High Street, Nan Bield, Long Stile in Mardale. It occurs also on Sca Fell, just outside the Westmorland boundary.

The variety *denudata* occurs here and there along with the type.

156. **Gyrophora erosa** (Web., Spic., p. 259); Ach., Meth., p. 103; Nyl., Syn., p. 15; Leighton, Lich. Flora, p. 145.

On rocks, near Red Tarn, Helvellyn.

157. **Gyrophora polyphylla** (L., Sp. Plant., No. 55); Nyl., Syn., ii, p. 18; Leighton, Lich. Flora, p. 143.

On rocks. Little Hart Crag. Maize Beck, Teesdale. The only Westmorland specimens in my herbarium at present are those from Little Hart Crag. I have a distinct recollection of gathering it on rocks near Maize Beck, but I seem only to have preserved the specimens gathered the same day on Cronkley Scar, Yorkshire. I have also gathered it at other places in Westmorland; as for instance, on the hills on the west of the Lune between Grayrigg and Tebay, and on the crags of Harter Fell overlooking the head of Mardale.

158. **Gyrophora polyrrhiza** (L., Sp. Plant., No. 56); Nyl., Syn., ii, p. 18; Leighton, Lich. Flora, p. 146.

On rocks. Staveley Head.

In this case, also, the only Westmorland specimens in my herbarium are from a single station, though I have met with the plant a few times in other places in the county, which, however, from forgetfulness I am unable to specify.

Tribe XVII. LECANO-LECIDEI Nyl.

Sub-tribe I. PANNARIEI Nyl.

XLII. PANNARIA Del. Nyl.

159. **Pannaria rubiginosa** (Thunb.) Nyl., Syn., ii, p. 29; Leighton, Lich. Flora, p. 150.

VAR. **cæruleobadia** (Schleich) Leighton, Lich. Flora, p. 151; *P. rubiginosa* var. *conoplea* Nyl., Syn., ii, p. 30.

On trees. Not very uncommon. Mardale, Kentmere, near Staveley, near Ambleside.

I have never met with the type in Westmorland.

160. **Pannaria brunnea** (Sw.) Nyl., Syn., ii, p. 31; *P. pezizoidea* Leighton, Lich. Flora, p. 151.

On mossy earth and stones. Not rare. Patterdale, Mardale, Kentmere, and near Staveley. There is a specimen in my herbarium, gathered in Mardale, on decayed poles used as palings, in which the habit is somewhat different.

161. **Pannaria nebulosa** (Hffm., Flora Germ., ii, p. 166); Nyl., Syn., ii, p. 32; Leighton, Lich. Flora, p. 153.

On earth between rocks, and on the tops of walls. Not so common as the preceding. Cunswick Scar, near Cross-thwaite, near Cliburn.

XLIII. *PANNULARIA* Nyl. in Flora, 1879, p. 360.**[Pannularia lepidiota (Smmrf.).**

In *The Naturalist* for 1886, p. 279, I recorded this species for Westmorland. Renewed examination of my specimens from Red Screes has convinced me that my determination was erroneous, and that they, in reality, merely represent a diminutive state of *P. muscorum*, specimens of which I have from the same place. The whitish suffusion of the thallus and the sorediate aspect of the margins in these specimens are due to some foreign lichenose matter which had overgrown the plant. It is needless, perhaps, to say that I regret my mistake.]

162. **Pannularia triptophylla** (Ach., Syn., p. 53); *Pannaria* Nyl., Syn., ii, p. 36; Leighton, Lich. Flora, p. 152.

On trees. Somewhat rare. Scandale, Kentmere, Staveley.

163. **Pannularia nigra** (Huds., Fl. Angl., p. 524); *Pannaria* Nyl., Syn., ii, p. 36; Leighton, Lich. Flora, p. 154.

On limestone rocks. Very common throughout the limestone districts. Cunswick Scar, Kendal Fell, Whitbarrow, Haverbrack, Sandside.

164. **Pannularia muscorum** (Ach., Syn., p. 193); *Pannaria* Nyl., Syn., ii, p. 40; *Pannaria carnosa* Leighton, Lich. Flora, p. 155.

On mosses. Red Screes, Kentmere.

XLIV. *COCCOCARPIA* Pers. Nyl.

165. **Coccocarpia plumbea** (Lightft., Flora Scot., ii, p. 826); Nyl., Syn., ii, p. 42; *Pannaria* Leighton, Lich. Flora, p. 154.

On trees. Rare. Curwens Island, Windermere, and in Lowther Park.

XLV. *LEPROLOMA* Nyl. in Flora, 1883, p. 107.

166. **Leproloma lanuginosum** (Ach., Syn., p. 201); *Amphiloma* Nyl., Syn., ii, p. 52; Leighton, Lich. Flora, p. 156.

On shady mossy rocks. Common in the Silurian districts and abundant in some places. I have not met with it on limestone.

Dr. Nylander has recently removed this plant from the genus *Amphiloma*, on account of its constantly imperfect development. The same cause renders its true position in classification uncertain.

Sub-tribe II. LECANOREI Nyl.

XLVI. LECANORA (Ach.) Nyl.

A. Group of *L. hypnorum* (*Psoroma*).

[*Lecanora hypnorum* (Vahl.) should occur in Westmorland, as it is reported from all the neighbouring counties, but I have not succeeded in finding it yet.]

B. Group of *L. saxicola* (*Squamaria*).

167. *Lecanora crassa* (Huds., Fl. Angl., 2nd ed., p. 530); *Squamaria* Nyl., Syn., ii, p. 58; Leighton, Lich. Flora, p. 157.

On earth in crevices of limestone rocks. Common in the limestone districts. Kendal Fell, Whitbarrow, Haverbrack, etc.

168. *Lecanora saxicola* (Pollich); *Squamaria* Nyl., Lich. Scand., p. 133; Leighton, Lich. Flora, p. 158.

On rocks and walls. Common. The variety *versicolor* (Pers.) occurs here and there, as at Staveley, along with the type.

169. *Lecanora gelida* (L., Mant., ii, p. 133); *Squamaria* Nyl., Scand., p. 134; Leighton, Lich. Flora, p. 159.

On rocks and walls. Common in the slate district, but seldom well developed, and often existing in a more or less dispersed condition.

C. Group of *L. murorum* (*Placodium*).

170. *Lecanora dissidens* Nyl. in Flora, 1875, p. 298; Leighton, Lich. Flora, p. 161 (as a form of *L. murorum*). Vide *The Naturalist*, 1887, p. 357.

On rocks, walls, and roofs. Widely distributed throughout the county, and in some places abundant. Arnside, Sandside, Kendal, Staveley, Shap, Barton, Eamont Bridge.

171. *Lecanora lobulata* Smmrf.; Nyl., Flora, 1883, p. 105; Leighton, Lich. Flora, p. 161 (as a variety of *L. murorum*). Vide *The Naturalist*, 1887, p. 358.

On rocks and stones. Very abundant (vitelline form) along the shore from Sandside to the boundary line between Westmorland and Lancashire. I have only gathered a very few specimens of the miniate form on Whitbarrow.

ON THE BOTANY OF THE CUMBERLAND PART OF THE PENNINE RANGE.

J. G. BAKER, F.R.S., F.I.S.,

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I HAVE long felt curious to know what the botany of the Cumberland part of the Pennine range was like. On the west side of it, the Lake district is well known, and on the east and south, Tynedale, Wear-dale, Teesdale, Wensleydale, and the country round Settle, have been well searched; but for the hundred square miles of Cumberland that drain into the Tyne, and form part of the great Pennine range, there are scarcely any botanical records. So this year, after attending the meeting of the British Association at Manchester, I took lodgings for a fortnight at Alston, and the present paper contains a summary of what I saw during this visit.

Physical Geography and Geology.—The district dealt with belongs entirely to Cumberland, but immediately adjoins portions of Northumberland, Durham, Westmorland, and the north-west corner of Yorkshire. Throughout the lower levels the mountain limestone is universal; it reaches a height of 1,950 feet above sea-level on the north side of Crossfell, and above it there is a thick cap of Millstone Grit; so that, from a geological point of view, it presents a complete contrast to the Lake mountains. The two main streams—the South Tyne and the Nent—unite just below Alston, a short distance south of the Northumbrian border, at an elevation of about 900 feet above sea-level. From Alston it is ten miles to the head of the Tyne, and rather less to the head of the Nent, and each main stream has numerous branches. There are two broad open grassy valleys, with but little crag on the hill-sides, the heather mainly confined to the high gritstone ridges. All the fields are bounded by stone walls, and the main roads into Teesdale and Weardale are excellent. There are no lakes or tarns, and I did not see a single *Potamogeton* or Batrachian *Ranunculus*, much less *Isoetes*, *Littorella*, or *Lobelia dort-manna*. It is a country of innumerable waterfalls, where the streams break through the bands of limestone, but none of them are so large as the High Force or Hardraw Force; the best known are Lower and Upper Nent Force, near Alston, and Ashgill Force, on a side stream six miles above Alston, up the Tyne. Crossfell reaches a height of 2,800 feet, so that the district covers the whole sweep of two of Watson's botanical zones, the super-agrarian and infer-arctic. Alston is the only town, and it stands on a steeply-sloping hill-side, at an

elevation of 900 to 1,100 ft. The village of Garrigill, four miles up the South Tyne, stands on an alluvial terrace along the river at a height of 1,100 to 1,150 ft. The considerable village of Nenthead, five miles up the other valley, is from 1,250 to 1,500 ft. above sea-level. There are numerous scattered farm-houses in both valleys, of which Priorsdale House over Ashgill reaches 1,766, and Rumney's House 1,980 ft. above sea-level; the latter, 500 ft. higher than the well-known inn at the top of Kirkstone Pass. The hills over Alston reach 1,600 ft. The pass into Weardale is 1,850, and into Teesdale over 1,900 ft. above sea-level; and the long wall-like ridge of Crossfell—the culminating point of the Pennine range, the watershed between Tyne, Tees, and Eden—bounds the horizon, looking south from Alston, and maintains for two miles an unbroken level of 2,600 to 2,800 ft.

Cultural characteristics of the Super-agrarian Zone.—

Of corn cultivation there is practically none above Alston. I saw only a single field of oats, and hawthorn hedges are very few in number; but houses and gardens extend to the upper limit of the super-agrarian zone, whilst at the lakes there are scarcely any above the mid-agrarian zone. At Nenthead there must be at least fifty small gardens and allotment-patches at a height of 400 to 500 yards. Speaking generally of these super-agrarian gardens, gooseberries, raspberries, cherries, and black and red currants, succeed well; plums occasionally, but apples and pears do not ripen properly. Rhubarb and potatoes are common and excellent, also cabbages and turnips; and lettuce, peas, parsley, and mint, are grown occasionally. There are many plantations up to 600 yards, those at the highest levels consisting mainly of pine, spruce, and larch. The commonest planted deciduous trees are the sycamore and beech, and poplars are not uncommon. In the gardens, lilac and laburnum both fruit commonly; honeysuckle, Irish yew, ivy, snowberry, and arbor-vitæ are frequent; box, holly, rhododendron, hop, and cherry-laurel rare; I did not see any out-of-door hydrangeas, clematises, jasmines, or aucubas. There are a few open-air fuchsias, and sometimes calceolarias and zonal pelargonias are bedded out. I noted one small araucaria, a few fine dahlias, hollyhocks, and sunflowers in sheltered gardens at Alston; and good hybrid Cape gladioli, as far up the valley as Ashgill; pansies are sometimes very fine. Other favourite garden-flowers are *Aconitum Napellus* and *paniculatum*, *Pæonia officinalis*, Wallflower, *Iberis umbellata*, *Arabis caucasica*, *Matthiola incana*, *Hesperis*, *Lunaria*, *Papaver somniferum*, *Tagetes patula*, *Calendula officinalis*, Sweet William, *Antennaria margaritacea*, *Chrysanthemum coronarium*, *Polemonium æeruleum*, *Phlox paniculata*, *Callistephus chinensis*, *Mimulus luteus*,

Pyrethrum Parthenium, and *Phalaris arundinacea* var. *picta*. Of herbaceous climbers, *Tropæolum majus* is the most common, and *Calystegia sepium* is not unfrequent round the door porches. Garden roses are represented by *gallica*, *spinosissima*, *rubiginosa*, and various forms of *indica*. I saw a fine Gloire de Dijon against the front of a house at Alston with a southern exposure.

ENUMERATION OF WILD PLANTS.

Where no height is given, I did not see the species over 300 to 350 yards. In nomenclature, I have followed the eighth edition of the London Catalogue.

Ranunculaceæ.—*Ranunculus*, no form of the section *Batrachium* seen; *R. Flammula*, *R. acris*, and *R. repens* everywhere common, ascending to the infer-arctic zone on Crossfell, and 600 yds. on Knoutberry Hill, over Nenthead. *Caltha palustris*, common, ascending to 650 yds. in the springs on Crossfell. *Aconitum Napellus*, established in a wood at Nenthall.

Papaveraceæ and **Fumariaceæ.**—None, except *P. somniferum* and *P. Rhœas* as garden flowers.

Cruciferæ.—*Cheiranthus Cheiri*, walls at Alston. *Nasturtium officinale*, rare in streamlets, up to 400 yds. above Nenthall. *Arabis sagittata*, limestone rocks at Ashgill Force, etc., 400 yds. *Cardamine pratensis*, common in grassy places, up to 700 yds. on Crossfell. *C. hirsuta*, walls at Alston. *C. sylvatica*, Ashgill Force, etc, up to 400 yds. *Draba incana*, limestone rocks at Ashgill Force, High Mains lime-kilns, and up to 550 yds. at Windy Brow, east of Tynehead. *Erophila vulgaris*, limestone walls at Alston. *Cochlearia alpina*, common in hill-streams and about the lead-mines from 550 yds. over Tynehead and Nenthead down to Lower Nent Force. *Sisymbrium Thaliana*, limestone rocks, up to 400 yds. below Nenthead. *S. Alliaria*, Lower Nent Force. *Brassica Rapa* and *B. alba*, casual weeds up to 500 yds. over Garrigill. *B. Sinapis*, once seen near Alston. *Capsella*, a common weed up to 500 yds. in both valleys. *Thlaspi alpestre*, everywhere common about the lead-mines, associated with *Arenaria verna* and *Cochlearia*, from 500 yds. over Garrigill and Nenthead, down to the cliffs of Lower Nent Force.

Cistineæ.—*Helianthemum Chamæcistus*, plentiful at the High Main's lime-kilns, two miles south of Alston, 400 yds.

Violarieæ.—*Viola palustris*, common in swamps up to 600 yds. on Knoutberry Hill, over Nenthead. *V. sylvatica*, common in woods up to the main limestone rocks of Windy Brow, 550 yds. *V. lutea*, common on grassy banks from Lower Nent Force up to the main limestone of Windy Brow, 300 to 550 yds.

Polygaleæ.—*Polygala serpyllacea*, Upper Nent Force, Blackburn lead-mines, etc., to 400 yds.

Caryophylleæ.—No *Silene*. *Lychnis diurna*, common in the woods as high as Ashgill, 400 yds. *L. Flos-cuculi*, swamps up to 500 yds. on Hartside Fell. *Cerastium glomeratum*, road-sides up to 400 yds. *C. triviale*, common up to the ridge of Crossfell. *Stellaria media*, common up to 650 yds. on Crossfell, both type and var. *neglecta*. *S. Holostea*, common in woods up to Ashgill, 400 yds. *S. graminea*, swamps up to 550 yds. over Tynehead. *S. uliginosa*, runnels, up to 700 yds. on Crossfell. *Arenaria verna*, everywhere common about the lead-mines, from 500 yds. over Garrigill and Nenthead down to Lower Nent Force. *A. serpyllifolia*, limestone rocks up to 600 yds. on Hartside Fell. *Sagina procumbens*, dams and road-sides up to the ridge of Crossfell. *S. nodosa*, swamps up to 700 yds. on Crossfell and 600 yds. on Knoutberry Fell, over Nenthead.

Portulacææ.—*Montia ricularis*, runnels up to 700 yds. on Crossfell.

Hypericineæ.—*Hypericum pulchrum* and *H. hirsutum*, common in the limestone woods up to Ashgill, 400 yds. *H. perforatum*, not seen.

Malvaceæ.—None seen, except Hollyhock and Malope rarely in the gardens.

Tiliaceæ.—A few fine trees of *Tilia vulgaris* in plantations at Alston.

Lineæ.—*Linum catharticum*, common about the limestone, up to 600 yds. over Tynehead, and on Hartside Fell. *L. usitatissimum*, casual, at Alston.

Geraniaceæ.—*Geranium sylvaticum*, common in woods and meadows up to Ashgill and Nenthead, 400 yds. *G. pratense*, meadows up to Garrigill, 400 yds. *G. molle* and *G. dissectum* not seen. *G. lucidum*, rocks at Lower Nent Force. *G. Robertianum*, common in woods up to the main limestone cliffs over Tynehead, 550 yds. *Oxalis Acetosella*, common in woods up to 750 yds. on Crossfell.

Sapindaceæ.—*Alex. Pinnatifidus*, one of the commonest trees of the plantations, up to 550 yds. in Ashgill woods; often seen self-sown about the waterfalls, etc.

Leguminosæ.—*Ulex europæus*, rare, up to 400 yds. over Nenthall. *Cytisus* and *Ononis* not seen. *Trifolium pratense*, meadows up to 600 yds. on Yarl Mess. *T. medium*, common in woods up to 450 yds. over Garrigill. *T. alpinum*, established by the side of the road up Hartside, 500 yds. *T. repens*, common up to 800 yds. on

Crossfell. *T. dubium*, once seen west of Alston, 400 yds. *Lotus corniculatus*, grassy places up to 550 yds. over Tynehead. *Vicia Cracca*, Ashgill Force, 400 yds. *V. sepium*, common up the main limestone rocks over Tynehead, 550 yds. *Lathyrus pratensis*, grassy places up to Ashgill, 400 yds. *L. macrorhizus*, Lower Nent Force, etc.

Rosaceæ.—*Prunus spinosa*, common, truly native in the limestone woods up to Ashgill, and nearly to Nenthead, 400 yds. *P. Padus*, everywhere common by the streams up to 500 yds. *Spiræa Ulmaria*, common up to 550 yds. over Tynehead. *Rubus Ideus*, everywhere common up to 550 yds. in the Ashgill woods. No fruticose or suberect *Rubus* seen within the Cumberland area, but *R. infestus* ascends the Tyne valley to Slaggyford. *R. cæsius*, Tyne side above Alston Bridge, mixed with *R. Ideus*. *R. saxatilis*, limestone rocks, Lower Nent Force, the Glen and over Tynehead, 300 to 550 yds. *R. Chamæmorus*, abundant on Knoutberry Fell, over Nenthead, down to 650 yds. ; not seen on Crossfell. *Geum urbanum*, woods up to Ashgill, 400 yds. *G. rivale*, common in woods, up to 550 yds. over Tynehead. *Fragaria vesca*, common in woods up to Ashgill. *Potentilla Fragariastrum*, woods up to 450 yds. over Garrigill. *P. Tormentilla*, common on heaths up to the Crossfell ridge. *P. anserina*, roadsides up to 500 yds. ascending Hartside. *Alchemilla vulgaris*, common in grassy places up to the Crossfell ridge. *Poterium officinale*, common in meadows up to 400 yds. *Rosa mollis* and *R. canina*, common in the woods up to 400 yds., the latter mainly var. *subcristata* Baker. *R. tomentosa*, Nent side below Upper Nent Force. *Pyrus Aucuparia*, everywhere common by the streams and in woods, ascending to 750 yds. on Crossfell and the highest main-limestone cliffs over Tynehead. *Cratægus monogyna*, common in the native woods up to 450 yds. over Garrigill. Hedges of any kind are extremely few in number in the whole district.

Saxifrageæ.—*Saxifraga stellaris*, runnels of Crossfell and Knoutberry Hill, 600 to 700 yds., not abundant. *S. hypnoides*, Ashgill Force, Yad Moss, Crossfell, etc., 400-750 yds. *Chrysosplenium oppositifolium*, Ashgill Force, Upper Nent Force, etc., 400 yds. *Parnassia*, common in swamps all through the limestone country up to 550 yds. *Ribes Grossularia*, Ashgill Force, etc., a casual. *R. petreum*, banks of the first little stream that joins the Tyne above Alston, on the east side of the river.

Crassulaceæ.—*Sedum Telephium*, rocks of Lower Nent Force. *S. villosum*, runnels by the side of the Alston and Middleton road above Tynehead. *S. acre*, walls at Alston and Garrigill.

Droseraceæ.—None seen.

Halorageæ.—*Callitriche stagnalis* and *C. hamulata*, both ascend to the infer-arctic zone on Crossfell.

Onagrarieæ.—*Epilobium angustifolium*, banks of the Tyne at Ashgill, and of the Nent below Upper Nent Force, 400 yds. *E. parviflorum* var. *reticulare*, swamps up to 400 yds. *E. montanum*, common in woods up to 500 yds. *E. obscurum*, common in swamps to 400 yds. *E. palustre*, swamps up to 700 yds. on Crossfell, 600 yds. over Nenthead. *E. alsinefolium*, springs below the main-limestone cliffs of Windy Brow, over Tynehead, 550 yds. *E. alpinum*, springs at the east end of Crossfell, over the Cashwell Mine, where it was discovered by the Rev. F. Addison, 600 to 700 yds.

Umbelliferæ.—*Sanicula*, Lower Nent Force, the Glen, etc. *Hydrocotyle*, not seen. *Pimpinella Saxifraga*, Ashgill Force, 400 yds. *Conopodium*, grassy banks. *Chærophylum temulum*, Lower Nent Force. *Anthriscus sylvestris* and *Heracleum*, common in meadows up to the main-limestone cliffs over Tynehead, 550 yds. *Angelica*, damp woods, up to 500 yds. over Ashgill Force. *Caucalis Anthriscus*, dry banks up to 400 yds. above Nenthall.

Araliaceæ.—*Hedera Helix*, common, truly native, on the limestone rocks up to 400 yds. at Ashgill, and above Nenthall.

Caprifoliaceæ.—*Sambucus nigra*, only seen in plantations. *Viburnum Opulus*, stream-sides up to 400 yds., rare. *Lonicera Periclymenum*, woods, not common, often in gardens at Alston.

Rubiaceæ.—*Galium boreale*, main limestone cliffs of Windy Brow, over Tynehead, 550 yds. *G. cruciata* and *verum*, common up to 450 or 500 yds. over Garrigill. *G. saxatile*, common at all levels up to the Crossfell ridge. *G. sylvestre*, common on limestone cliffs from Lower Nent Force to 550 yds. over Tynehead. *G. palustre*, swamps up to the high springs of Crossfell. *G. uliginosum*, swamps up to 500 yds. over Tynehead. *G. Aparine*, rare. *Asperula odorata*, common in woods up to Ashgill, 400 yds.

Valerianeæ.—*Valeriana officinalis*, common in damp woods up to 550 yds. over Tynehead. *Scabiosa succisa*, common in meadows up to 550 yds. in the Ashgill plantations. *S. columbaria*, High Mains limestone quarries, 400 yds.

Compositæ.—*Eupatorium*, not seen. *Solidago*, main limestone rocks of Windy Brow, 550 yds. *Bellis perennis*, common up to the Crossfell ridge. *Achillea Millefolium* and *A. Ptarmica*, both common up to the Crossfell ridge. *Chrysanthemum Leucanthemum*, common in meadows up to 400 yds. *Tussilago Farfara*, common up to the Crossfell ridge. *Petasites*, banks of lower part of Tyne and Nent up to Upper Nent Force. *Senecio vulgaris*, a common weed up to 500 yds. over Garrigill. *S. Jacobæa*, common up to 500 yds. over

Garrigill. *S. aquaticus*, common up to 450 yds. over Garrigill. *Cnicus lanceolatus* and *C. palustris*, common up to the Crossfell ridge. *C. heterophyllus*, common in woods and meadows up to 550 yds. in the Ashgill plantations. *C. arvensis*, common up to 600 yds. on Hartside. *Centaurea nigra*, common up to 500 yds. in the Ashgill plantations. *Lapsana*, common up to 400 yds. in the Nent valley. *Crepis paludosa*, common up to 550 yds. in the Ashgill plantations. *Hieracium Pilosella*, grassy banks up to the main-limestone scars of Windy Brow, 550 yds. *H. caesium* var. *Smithii* and *H. vulgatum*, common on the limestone rocks and walls up to 550 yds. *H. crocatum*, banks of the Nent at Middle Nent Force. *H. boreale*, common in woods up to 450 yds. over Garrigill. *Hypochaeris radicata*, pastures to 400 yds. *Leontodon autumnale*, pastures up to the Crossfell ridge. *L. hispidus*, pastures up to 500 yds. over Tynehead. *Taraxacum*, common up to 650 yds. on Crossfell, and 600 yds. over Nenthead. *Lactuca muralis*, limestone rocks at Ashgill Force, 400 yds. *Sonchus asper*, waste ground up to 450 yds. over Garrigill.

Campanulaceæ.—*Campanula latifolia*, woods by the Tyne up to 400 yds. at Ashgill. *C. rotundifolia*, grassy places up to the main limestone at Hartside, 600 yds.

Vacciniaceæ.—*Vaccinium Myrtillus*, heaths and woods at all levels up to the Crossfell ridge. *V. Vitis-idea*, not seen.

Ericaceæ.—*Calluna*, common at all levels up to the Crossfell ridge. *Erica cinerea*.

Plumbagineæ.—*Armeria maritima*, abundant at the High Mains lime-kilns, associated with *Cochlearia*, *Thlaspi alpestre*, and *Arenaria verna*, 400 yds.

Primulaceæ.—*Primula vulgaris* and *P. veris*, common up to Ashgill, 400 yds. *P. farinosa*, not seen, though *Parnassia*, its usual associate in Teesdale, is so common. *Lysimachia nemorum*, Ashgill Force, 400 yds.

Oleaceæ.—*Fraxinus*, one of the commonest trees of the district, up to 550 yds. in the Ashgill plantations.

Gentianeæ.—*Gentiana Amarella*, frequent about the limestone up to 400 yds.

Boragineæ.—*Myosotis cæspitosa*, runnels up to 450 yds. over Garrigill. *M. sylvatica*, Ashgill Force, and wood by the Nent above Nenthall, 400 yds. *M. arvensis*, woods up to Ashgill, 400 yds.

Scrophularineæ.—*Linaria Cymbalaria*, casual, on walls at Alston. *Scrophularia nodosa*, Lower Nent Force. *Digitalis*, frequent up to 550 yds. in the Ashgill plantations. *Veronica agrestis*, a weed up to Ashgill, 400 yds. *V. persica*, a weed in the gardens at Nenthead, 400 yds. *V. arvensis*, up to 600 yds. in limestone quarries of

Yad Moss. *V. Chamedrys*, common up to 550 yds. in the Ashgill plantations. *V. montana*, Ashgill Force, 400 yds. *V. serpyllifolia* and *V. officinalis*, up to 650 yds. on Crossfell. *V. scutellata*, swamps up to 400 yds. *V. Beccabunga*, common in runnels up to the high springs of Crossfell. *Euphrasia*, everywhere common up to the Crossfell ridge. *Bartsia Odontites*, road-sides up to 400 yds., rare. *Pedicularis palustris* and *sylvatica*, frequent in swamps up to 500 yds. over Tynehead. *Rhinanthus Crista-galli*, common in grassy places up to the Crossfell ridge.

Lentibulariæ.—*Pinguicula vulgaris*, swamps up to the high springs of Crossfell.

Labiata.—*Mentha arvensis*, road-sides, rare. *Prunella*, grassy places up to the Crossfell ridge. *Stachys palustris*, road-sides, rare. *S. sylvatica*, common in woods up to Ashgill, 400 yds. *Galeopsis Tetrahit*, a weed, up to 500 yds. over Nenthead. *Lamium purpureum*, a weed up to 500 yds. over Garrigill. *Teucrium Scorodonia*, common in woods up to Ashgill, and wood beyond Nenthall, 400 yds. *Ajuga reptans*, woods up to 500 yds. in the Ashgill plantations.

Plantagineæ.—*Plantago major* and *P. lanceolata*, common up to 650 yds. on Crossfell and 600 yds. over Nenthead. *P. media*, limestone quarry near Alston, 400 yds.

Chenopodiaceæ.—*Chenopodium album*, weed at Alston, rare. *C. Bonus-Henricus*, about houses up to 450 yds. over Tynehead. *Atriplex patula*, weed up to 450 yds. over Garrigill.

Polygonaceæ.—*Polygonum Convolvulus*, weed up to 500 yds. ascending Hartside. *P. aviculare*, road-sides up to 500 yds. *P. Persicaria*, a weed up to 450 yds. over Garrigill. *Rumex viridis*, woods, rare. *R. obtusifolius*, waste ground up to 500 yds. *R. crispus*, waste ground up to 600 yds. on Hartside. *R. Acetosa* and *R. Acetosella*, meadows and heaths up to the Crossfell ridge.

Euphorbiaceæ.—*Mercurialis perennis*, common in woods up to Ashgill, 400 yds.

Urticaceæ.—*Ulmus montana*, one of the commonest trees of the district, up to 550 yds. in the Ashgill plantations. *Urtica dioica*, common up to the highest miners' huts on Crossfell. *U. urens*. Alston, Garrigill, etc., up to 400 yds.

Cupuliferæ.—*Betula*, frequent in the woods; *B. glutinosa* specially noted at Ashgill Force. *Alnus*, everywhere common by the streams up to 550 yds. in the Ashgill plantations. *Corylus*, common in the limestone woods up to Ashgill and above Nenthall, 400 yds. *Quercus* much less common than Elm, Ash, and Rowan; *Q. sessiliflora* specially noted at the lead-mine west of Nenthall. *Fagus*, one of the commonest trees of the plantations, up to 550 yds. at Ashgill.

Salix pentandra, about the Nent below Upper Nent Force, and near the junction of the Black burn and Tyne, 400 yds. *S. fragilis* and *S. alba*, about the stream near the Glen waterfall, a mile above Alston, probably planted. *S. viminalis* and *S. Smithiana*, only seen near houses, probably planted. *S. caprea* and *S. cinerea*, frequent up to 550 yds. in the Ashgill plantations. *S. aurita*, frequent up to 400 yds. on the banks of the Nent below Nenthead. *S. phylicifolia*, the commonest willow of the stream-sides from Ashgill and Nenthead downwards, 400 yds., in a great variety of forms. *Populus alba*, *P. nigra* and *P. tremula*, often seen but probably always planted, as is *P. balsamifera*.

Empetraceæ.—*Empetrum*, common on heaths up to 800 yds. on Crossfell.

Coniferæ.—Pine, Spruce, Larch, common in the plantations.

Orchideæ.—Too late for Orchids, the only one seen being *Orchis maculata* in a wood by the Nent, 400 yds.

Liliaceæ.—*Allium ursinum*, woods near Alston.

Juncaceæ.—*Juncus effusus*, *J. conglomeratus*, *J. squarrosus*, and *J. supinus*, common at all levels up to the Crossfell ridge. *J. bufonius*, runnels up to 600 yds. over Nenthead. *J. glaucus*, up to 400 yds., rare. *J. lamprocarpus*, common in swamps up to 600 yds. *J. acutiflorus*, common in swamps up to 500 yds. over Tynehead. *Luzula maxima*, common in woods up to the main-limestone cliffs of Windy Brow, 550 yds. *L. multiflora*, heaths up to the Crossfell ridge. *L. campestris*, common.

Naiadaceæ.—*Triglochin palustre*, common in swamps up to 700 yds., especially by the side of the road up Hartside. No *Potamogeton*, *Typha* nor *Sparganium* seen.

Cyperaceæ.—*Scirpus cæspitosus*, common on heaths up to the Crossfell ridge. *Eriophorum vaginatum*, heaths up to 650 yds. on Crossfell. *E. angustifolium*, boggy heaths up to 800 yds. on Crossfell, 650 yds. on Knoutberry Fell. *Carex echinata*, swamps up to 700 yds. on Crossfell. *C. ovalis* and *C. acuta*, lowland bogs. *C. Goode-novii*, common in swamps up to 500 yds. *C. glauca* and *C. dioica*, common in bogs up to 650 yds. on Crossfell. *C. panicea*, swamps up to 500 yds. *C. sylvatica*, lowland woods. *C. flava*, swamps up to 700 yds. on Crossfell. *C. fulva*, ascent of Crossfell from Garrigill, 500 yds. *C. hirta*, road-side between Garrigill and Alston, 400 yds. *C. rostrata*, mountain swamps up to 600 yds. over Nenthead.

Gramineæ.—*Phalaris canariensis*, a casual weed. *P. arundinacea*, damp woods up to Ashgill, 400 yds. *Anthoxanthum*, common up to 650 yds. on Crossfell. *Milium effusum*, Ashgill Force, 400 yds. *Phleum pratense*, road-sides up to 400 yds. *Agrostis canina*, *A. alba*, and *A. vulgaris*, common up to the ridge of

Crossfell. A viviparous form of *A. vulgaris* occurs. *A. nigra*, common by road-sides. *A. pumila*, very characteristic at the east end of the Crossfell ridge, near the Cashwell lead-mine. *Deschampsia cæspitosa* and *D. flexuosa*, common up to the Crossfell ridge. *Holcus lanatus* and *H. mollis*, common up to 500 or 550 yds. *Trisetum flavescens*, main limestone of Hartside Fell, 600 yds. *Avena pratensis*, limestone rocks at Ashgill Force and by the Nent below Nenthead, 400 yds. *Arrhenatherum*, common up to 400 yds. *Triodia decumbens*, Upper Nent Force. *Sesleria cærulea*, main-limestone cliffs over Tynehead, 550 yds. *Cynosurus*, common up to 500 yds. *Molinia*, heaths up to 550 yds. in the Ashgill plantations. *Melica uniflora*, Lower Nent Force and the Glen waterfall. *Dactylis*, pastures up to 500 yds. over Garrigill; a viviparous form near the Alston cemetery. *Briza media*, common up to the main-limestone rocks over Tynehead, 550 yds. *Poa annua* and *P. pratensis*, common up to the Crossfell ridge. *P. trivialis*, frequent. *P. nemoralis*, Lower Nent Force and Ashgill Force, 400 yds. *Glyceria fluitans*, swamps up to 600 yds. over Nenthead. *G. plicata*, Tyne-side above Alston. *Festuca ovina* and *F. duriuscula*, common up to the Crossfell ridge. *F. pratensis*, common up to 500 yds. over Garrigill. *F. arundinacea*, up to 500 yds. ascending Hartside. *Bromus giganteus* and *B. asper*, woods in both valleys up to 400 yds. *Brachypodium sylvaticum*, Lower Nent Force. *Lolium perenne*, common up to 500 yds. ascending Hartside. *Agropyrum caninum*, frequent in the limestone woods up to Ashgill, 400 yds. *A. repens*, common up to 500 yds. on a garden-wall at Nenthead. *Nardus*, common up to the Crossfell ridge.

Filices.—*Pteris*, common up to 500 yds. *Cryptogramme*, plentiful on the gritstone rocks of the Crossfell ridge. *Lomaria*, heaths up to 500 yds. *Asplenium* *Adiantum-nigrum*, shown to me by Mr. Richardson, from Ashgill. *A. viride*, frequent on the limestone cliffs up to 550 yds. over Tynehead. *A. Trichomanes* and *A. Rutamuraria*, walls at Alston. *Athyrium*, common up to the gritstone rocks of the Crossfell ridge. *Scolopendrium*, limestone rocks, rare. *Cystopteris fragilis*, common on limestone rocks up to 550 yds. over Tynehead. *Polystichum lobatum*, Ashgill Force and rocks by the Nent below Nenthead, 400 yds. *Lastrea Filix-mas* and *L. dilatata*, common up to 800 yds. on Crossfell, many forms of both species. *Polypodium vulgare*, common up to the main-limestone rocks over Tynehead, 550 yds. *P. Dryopteris* and *P. Phegopteris* ascend to the shaly banks of the highest gills of the Tyne, 500 to 600 yds. *Ophioglossum vulgatum*, shown me by Mr. Denwood on a grassy bank ascending Hartside from Alston, 500 yds. *Botrychium*, Upper Nent Force, and found by Mr. Richardson near Ashgill, 400 yds.

Equisetaceæ.—*Equisetum arvense*, common up to 500 yds. *E. sylvaticum*, common up to 400 yds., very fine in wood sloping to the Nent below Nenthead. *E. palustre*, common up to 700 yds. on Crossfell. *E. limosum*, up to 400 yds. in the Nent valley.

Lycopodiaceæ.—*Lycopodium Selago*, gritstone ridge of Crossfell and main-limestone cliffs of Windy Brow, over Tynehead. *L. alpinum*, gritstone ridge of Crossfell. *Selaginella selaginoides*, swamps below the limestone at High Mains and Windy Brow, 400 to 500 yds.

Plants of the Infer-arctic Zone.—The following are the species which I saw on the Crossfell ridge within the bounds of the infer-arctic zone, with the heights to which they reach :—

UP TO 750 OR 800 YARDS.—*Sagina procumbens*, *Cerastium triviale*, *Oxalis Acetosella*, *Trifolium repens*, *Pyrus Aucuparia*, *Saxifraga hypnoides*, *Galium saxatile*, *Bellis perennis*, *Calluna vulgaris*, *Vaccinium Myrtillus*, *Empetrum nigrum*, *Urtica dioica*, *Rumex Acetosa*, *R. Acetosella*, *Juncus squarrosus*, *Eriophorum angustifolium*, *Carex stellulata*, *Agrostis vulgaris*, *Deschampsia flexuosa*, *Poa pratensis*, *Festuca ovina*, *Nardus stricta*, *Athyrium Filix-fœmina*, *Cryptogramme crispa*, *Nephrodium Filix-mas*, *N. dilatatum*, *Lycopodium Selago*, and *L. alpinum*—twenty-eight species.

UP TO 700 YARDS.—*Ranunculus Flammula*, *R. repens*, *R. acris*, *Cardamine pratensis*, *Sagina nodosa*, *Stellaria uliginosa*, *Montia fontana*, *Saxifraga stellaris*, *Callitriche hamulata*, *C. stagnalis*, *Epilobium alpinum*, *E. palustre*, *Galium palustre*, *Achillea Ptarmica*, *A. Millefolium*, *Tussilago Farfara*, *Cnicus palustris*, *Apargia autumnalis*, *Euphrasia officinalis*, *Veronica Beccabunga*, *Thymus Serpyllum*, *Pinguicula vulgaris*, *Triglochin palustre*, *Juncus effusus*, *J. supinus*, *Carex flava*, *Deschampsia cæspitosa*, *Agrostis alba*, *A. canina*, and *Equisetum palustre*—thirty species.

UP TO 650 YARDS.—*Caltha palustris*, *Stellaria media*, *Alchemilla vulgaris*, *Potentilla Tormentilla*, *Cnicus lanceolatus*, *Taraxacum officinale*, *Rhinanthus Crista-galli*, *Veronica serpyllifolia*, *V. officinalis*, *Prunella vulgaris*, *Plantago major*, *P. lanceolata*, *Eriophorum vaginatum*, *Carex dioica*, *C. glauca*, *Scirpus cæspitosus*, *Juncus conglomeratus*, *Luzula multiflora*, *Anthoxanthum odoratum*, and *Poa annua*—twenty species.

The only other species seen elsewhere, not contained in the above list, was *Rubus Chamæmorus* on Knoutberry Fell, at 650 or 700 yds.

The best plant-stations.—It may save the time of those who follow if I indicate what I found the most productive plant-localities in the district. They were—(1) Banks of the Nent about Upper and Lower Nent Force ; (2) Rocky banks of the Nent where the road crosses the stream between Nenthead and Nenthall ;

(3) The east end of the Crossfell ridge, over the Cashwell mine ; (4) Limestone cliffs of High Mains, midway between Alston and Garrigill and (5) of Windy Brow, due east over Tynehead ; (6) Ashgill Force and the plantations above it, up to a height of 600 yds. ; (7) The Glen Waterfall on the second tributary stream on the east side of the Tyne, above Alston.

Summary.—Not counting varieties and casuals my Alston list contains 304 species, of which 301 belong to the super-agrarian and 79 to the infer-arctic zone. Doubtless both these figures might be increased by 25 per cent. if the district was worked in the middle of summer. The montane element seems to enter into the flora of the district to about the same extent as in Wensleydale or Weardale, and much less than in Teesdale. Montane plants here specially plentiful are *Thlaspi alpestre*, *Cochlearia alpina*, *Arenaria verna*, *Viola lutea*, *Carduus heterophyllus*, *Rosa subcristata*, *Geranium sylvaticum*, *Parnassia palustris*, and *Salix phylicifolia*. Whether *Potamogeton*, *Batrachium*, *Sparganium*, *Typha*, *Hydrocotyle*, *Drosera*, *Primula farinosa*, *Erica Tetralix*, *Vaccinium Vitis-idaea*, and several other things I expected, but did not see, are really absent, I leave for those who follow me to search out. Evidently more of the lowland species ascend the hills in the Mountain Limestone than in the slate tract. 301 is exactly the number of species recorded from the super-agrarian zone at the Lakes, but in many cases the species are different, as will be seen by comparing this present list with my Lake Flora. The super-agrarian zone is here entirely Mountain Limestone hills, and at the Lakes entirely Silurian hills, with much less continuous ridge and a more sudden slope. The infer-arctic zone here is entirely Millstone Grit, and its poverty in boreal types is no doubt essential, not casual.

NOTE—BOTANY.

Linaria minor in Cumberland.—Under the date of July 1872, I find in my notes a record of the discovery of this plant on the Cockermouth and Workington line of railway at Brigham station, two miles from the former town, where it continues to flourish in some abundance on the ballast used in the construction of the railway, which consists of loose gravel partially mingled with coal ashes. I next found it growing plentifully on the Maryport and Carlisle Railway some little way to the eastward of Aspatria station, and close to the triple-arched viaduct, which there spans the line over a deep cutting. Some fifteen or sixteen years ago a subsidence of the railway occurred at this particular point owing to the 'creeping' of an adjoining colliery working. It became necessary to raise the line to its proper level, and engine ashes from the pit were utilised for the purpose. Here the *Linaria* promptly made its appearance, and so rapidly has it spread that it may be gathered there now by hundreds. Another locality may be added, viz., the extensive limestone quarry at Yeathouse, near Frizington, where I saw two or three plants only in 1877. These grew on a bank of refuse from the workings, but whether ashes were present I do not remember. I have had no opportunity of examining the last mentioned station since the date referred to. I find no mention of *Linaria minor* in any of the lists compiled by previous observers in any part of Cumberland.—WM. HODGSON, Flimby, Maryport, Nov. 17th, 1887.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT WELTON VALE.

THE 69th meeting of the Yorkshire Naturalists' Union was held on the 27th of August last, at the pleasant little village of Welton (near Brough), for the exploration of Welton Vale, a picturesque little valley excavated in the Wolds. Permission had been kindly granted by Mr. W. H. H. Broadley for members to wander freely over his estates. The excursion was well attended by East Riding members and favoured by brilliantly fine, not to say sultry weather. No stated parties were arranged, the field of investigation being so circumscribed, but the members present found the best of guidance at the hands of Mr. E. A. Peak, the superintendent of the Hull parks, who is well acquainted with the plants of the district, and of Mr. F. Fielder Walton of Hull, who was equally familiar with its geological characteristics. Swanland Dale was included in the investigation, and also the small valley called Wold Dale.

All the members re-assembled in the afternoon at the Green Dragon Hotel at Welton, where they were well catered for.

After tea the usual meetings were held. At the general meeting, in the absence of all the vice-presidents, Mr. Thomas Bunker of Goole was chosen to fill the chair. The minutes of the Sedbergh meeting having been read and confirmed, the Scarborough Philosophical and Archæological Society was unanimously admitted into the Union—and Mr. John Handley, of Briggflatts near Sedbergh, was elected a member. Thanks were then voted to Mr. Broadley and to Captain Burstall for permission to visit their estates; to Messrs. E. A. Peak and F. F. Walton for their services as guides; and to Mr. Bunker for presiding. The Sectional Reports were then given.

For the Vertebrate Section its secretary, Mr. James Backhouse, jun., M.B.O.U., York, reported that on account of the smallness of the number of observers and the scarcity of migrants, there were very few birds seen.

For the Conchological Section, too, for which Mr. J. Darker Butterell, of Beverley, secretary of the section, reported, there were only very few species recorded, the reason in this case being the long-continued drought of the season and the dryness of the soil on the day of investigation. *Clausilia laminata* and its var. *albida*, *C. rugosa*, *Helix virgata*, etc., were collected, and *Planorbis albus* was collected in its old locality—the pond at the entrance to the dale.

The Entomological Section—strange to say for so favourable a district and such fine weather—was not represented, further than that

Mr. Riley and the chairman gave some interesting information as to the spread of the Hessian Fly (*Cecidomyia destructor*) in East Yorkshire, some pupæ of it having been found during the day.

For the Botanical Section, in the absence of all its officers, Mr. E. A. Peak furnished the following account of the proceedings of the botanical members:—The botanists started, in company with the geologists, from the 'Green Dragon' Inn, Welton, a little after 10 a.m., going by what is locally known as the 'high' road to Elloughton, where at the foot of the walls was found *Malva rotundifolia* in flower, although it was not at all plentiful. Passing through this little hamlet in the direction of Brough, they came to a gravel-pit, where the geologists seemed to have a good time of it, but it yielded nothing particular botanically; and from here the route was taken to the Brough and Cave High Road, searching on the way for *Carduus eriophorus*, which grows here, but was not found on this occasion. Soon after gaining the road the party came on a fine patch of *Astragalus glycyphyllos* in fruit, with *Ballota nigra* in plenty by the roadside; thence proceeding in the direction of Cave, they soon came to the 'Cockle-pits,' and speedily found *Agrostis spica-venti*, *Campanula glomerata*, *Gentiana amarella*, and *Saponaria officinalis*, although none were plentiful. Here the botanists parted company with their geological friends, who went in the direction of Cave, and the botanists going to the south of Ellerker to visit a little bit of choice botanical hunting-ground where they expected to find *Menyanthes trifoliata*, *Pinguicula vulgaris*, *Anagallis tenella*, and *Pedicularis palustris*, which expectations were not disappointed. From this point they made direct for the village of Brantingham, going by way of Green's-lane, where was gathered *Lycopsis arvensis*. The next destination was the chalk-pit in Brantingham Dale, where was found abundance of *Campanula glomerata*, *Gentiana amarella*, a plant or two of *Carlina vulgaris* and *Tanacetum vulgare*, the latter evidently an escape. It was now time to think about wending the way back to Welton, which was accordingly done, going by way of Spout hill-top to look for the solitary patch of *Campanula rapunculoides* which used to grow there, and which was found, but not in flower, so that the botanists had to be content—or otherwise—with leaves and partially withered flower-stems. From here they proceeded along the brow of the chalk Wolds, picking up as they went a plant or two of *Arabis hirsuta* and *Epilobium angustifolium*, and *Circea lutetiana* in plenty, but they had not time to visit a field; although near, where *Linaria clatine* is usually found; then down Elloughton Dale, but *Chlora perfoliata* could not be found in its known locality, and so back to Welton. It may be mentioned that *Campanula latifolia*,

Linaria minor, and *Lactuca muralis* were gathered by one of the party near North Ferriby on the day previous to the Union's visit. The other plants noted were the following:—*Ranunculus flammula*, *Reseda lutea*, *R. luteola*, *Helianthemum vulgare*, *Silene noctiflora*, *S. inflata*, *Lychnis vespertina*, *L. diurna*, *Cerastium semidecandrum*, *C. arvense*, *Stellaria graminea*, *Malva sylvestris*, *Linum catharticum*, *Geranium robertianum*, *Ononis spinosa*, *O. arvensis*, *Anthyllis vulneraria*, *Lotus major*, *Prunus spinosa*, *Spiræa filipendula*, *Agrimonia eupatorium*, *Poterium sanguisorba*, *Alchemilla arvensis*, *Fragaria vesca*, *Geum urbanum*, *Epilobium hirsutum*, *Myriophyllum verticillatum*, *Ribes alpinum*, *Parnassia palustris*, *Sanicula europæa*, *Æthusa cynapium*, *Silaus pratensis*, *Daucus carota*, *Torilis anthriscus*, *Chærophyllum temulum*, *Cornus sanguinea*, *Galium cruciatum*, *G. verum*, *Asperula odorata*, *Valeriana dioica*, *Dipsacus sylvestris*, *Scabiosa succisa*, *S. columbaria*, *S. arvensis*, *Carduus nutans*, *Centaurea scabiosa*, *Artemisia vulgare*, *Inula dysenterica*, *Aster tripolium*, *Hypochaeris radicata*, *Leontodon autumnalis*, *Tragopogon pratensis*, *Campanula rotundifolia*, *Convolvulus arvensis*, *Linaria vulgaris*, *Euphrasia officinalis*, *Bartsia odontites*, *Mentha hirsuta*, *M. sativa*, *Thymus serpyllum*, *Calamintha clinopodium*, *Stachys arvensis*, *Galeopsis versicolor*, *Anagallis arvensis*, *Glaux maritima*, *Plantago media*, *Chenopodium album* and var. *viride*, *Euphorbia peplus*, *E. exigua*, *Urtica urens*, *Humulus lupulus*, *Triglochin palustre*, *T. maritimum*, *Listera cordata*, *Juncus obtusiflorus*, *J. lamprocarpus*, *Eriophorum vaginatum*, *Avena flavescens*, *Brachypodium sylvaticum*, *Pteris aquilina*, *Nephrodium filix-mas*, *N. dilatatum*, and *Equisetum arvense*.

For the Geological Section, in the absence of all its officers, Mr. F. Fielder Walton, of Hull, who has paid special attention to the district, and is the author of a memoir upon it which has been reviewed in this journal, reported that the party leaving the Green Dragon at Welton first went to the entrance to Welton Dale; then to Elloughton and along the high-road to South Cave; then over Mount Airy and across Woodale into Brantingham Dale; then through the plantations on the hill-sides to Elloughton and back again to Welton. Several deviations were made for the purpose of examining the pits and quarries along the route. The Millepore Limestone, the lowest of the strata examined, is in this locality about 20 ft. in thickness, and consists of bands of bluish limestone usually massive and well jointed. After exposure to the weather it changes to a pale yellow or brown colour. The upper portions of the Millepore Limestone become alternated with beds of sand and gradually become changed into the Sandy Oolite. The Sandy

Oolite was well seen in two quarries near the road-side a little to the north of Brough. One of these (the Cockle pits) gives the following section from above downwards :

	Ft.	in.
Brown rubbly Oolite	6	0
Compact Limestone	2	6
Brown Oolite (loosely bedded)	1	6
Compact Oolite	3	0
Irregular seams of loosely-bedded Oolite	10	0
Total	23	0

The other quarry, the strata of which overlie those just mentioned, was found to present less of the oolitic character of the limestone—but was much more fossiliferous; numerous specimens of *Rhynchonella*, *Terebratula*, and *Pecten* were found, also several of *Trigonia*, *Modiola*, and *Pinna*. The Kelloway sands were examined at South Cave and numerous specimens of *Gryphæa bilobata*, *Rhynchonella*, *Terebratula*, and fragments of a large ammonite which must have measured twelve inches in diameter, were found. The Red Chalk was seen at the entrance to Welton Dale; and its position was indicated at several places along the route by springs issuing from underneath the grey chalk. Great interest was taken in these springs by the members of the party, who found walking very hot work. The lower strata of the chalk were examined in several places on the hill-sides. Several sand- and gravel-pits were seen. The gravel was mainly composed of rounded and sub-angular fragments of chalk, flint, and oolitic limestone. *Gryphæa incurva*, *Belemnites*, and a species of *Ostrea* were found mixed with the gravel; and in a pit near Elloughton fragments of bones of some large animal (probably of the mammoth type), which had been found by the workmen, were seen.

This concluded the business. The few West Riding members present being unable to get away by train for a couple of hours, spent their time in inspecting Mr. Broadley's gardens and greenhouses, and afterwards on the shores of the Humber near Brough Station.

NOTE—MOLLUSCA.

Amalia gagates in Cheshire.—On the 5th of September last year, while looking for slugs in a garden at Bowdon, Cheshire, I was much interested to find a specimen of what I took for *Amalia gagates*; and, on sending it to Mr. Roebuck, my opinion was confirmed. I know of no previous record for the species in Cheshire. The only time I have found it before was in Achill Island, co. Mayo, where it was tolerably plentiful on the turf walls.—J. G. MILNE, Corpus Christi College, Oxford, Jan. 16th, 1888.

[The specimen was typical in colour, being nearly black, and not of the brownish tint so usual in British examples; the typical colour is rare in Britain, and I have only seen about three examples amongst the very numerous specimens of *A. gagates* which have passed through my hands.—W. D. R.]

INTERESTING DISCOVERY OF BOULDERS IN THE COAL MEASURES AT WORTLEY, NEAR LEEDS.

CHARLES BROWNRIDGE, F.G.S.,

Burley, Leeds.

AT a recent meeting of the Leeds Geological Association, Mr. C. Brownridge, F.G.S., read a short paper, entitled 'Notes on Four Boulders found in the Black Bed Coal and overlying Shales and Ironstone at Wortley.' Mr. Brownridge, after alluding to the fact that the presence of boulders in the coal measures is becoming an important question, said that these interesting discoveries occur from time to time, some having been found in the coalfields of Leicestershire, Lancashire, Derbyshire, North Staffordshire, and the Forest of Dean; but none hitherto appear to have been recorded from our immediate district. As evidences of this character may eventually become powerful factors in determining geological problems, it is essentially desirable such discoveries should be recorded. The position where these boulders were found is situate in the fork of land bounded by the London and North Western and Great Northern Railways, the Geldard Road and the Farnley Beck, and were got out of the pit known as the 'No. 1 Black Bed Pit.' The whole of this neighbourhood is worked for the Wortley fire-clay by Messrs. Ingham and Sons, in the commercial manipulation of which they have achieved such a wide reputation. Along with the fire-clay the better bed coal above is got, and at a still higher level the black bed coal and the overlying ironstone are worked. It was in the last-named beds that the specimens were found. The depth of the black bed coal from the surface is here 30 ft. The largest of the boulders is a coarse gritstone, and nearly spherical in shape. Its dimensions are 2 ft. 6 in. by 2 ft., and it has a fairly smooth, polished face, with slight striæ. This example was found embedded in the 'bind,' or clayey shales, just overlying the coal. The other three boulders (or pebbles) are quartzites, and much smaller in size, varying from 11 in. by 9 in. to 3¼ in. by 2½ in., and were all found embedded in the black bed coal itself. Two of the specimens are more angular in general shape than the third specimen, but in all of them the angles are well rounded off and the faces polished.

Prof. Bonney, D.Sc., LL.D., F.R.S., etc., to whom two sections of the quartzites have been submitted, kindly describes them as follows:—

‘No. 1 Specimen.—The grains in the rock are remarkably well rounded. The majority are quartz, but there are some grains, also rounded for the most part, which are brown in colour, more or less opaque. I think it possible that these are decomposed felspar, stained by infiltrated bituminous material. The quartz grains are cemented by secondary quartz, sometimes, but not always, in optical continuity with the adjacent grains; cavities appear to be frequent in most grains, but are generally of very small size; sometimes a tiny bubble may be noted, but I think that they are commonly empty; some grains contain a number of small almost colourless belonites, rather like sillimanite, which are commonly seen in the quartz of certain old granitoid rocks; others contain a flake of brown mica, a tiny crystal or two, probably an iron oxide or a crystallite, which may be zircon. I expect the quartz has been derived from an old granitoid rock. The well-rounded grains difference this specimen from those quartzites or grits which I have hitherto seen from boulders in coal, but a specimen which I obtained from one of the old quartzites of the Lickey Hills also contains many well-rounded grains, and so does a quartzite in the Charnwood series; of course, I do not mean to suggest that we must look in this direction for the parent rock.

‘No. 2 Specimen.—This rock differs but little from the last. The grains, as a rule, I think, are not quite so well rounded, and rather more are stained; those containing the belonites are perhaps not quite so common. A small grain may be brown tourmaline, and I think this mineral is also included in a quartz grain. It is very probable that this boulder comes from the same parent rock as the other one.’

Prof. Bonney, in his presidential address to Section C of the British Association at Birmingham in 1886, described several boulders found in coal, the examination of which he rightly considers to be of great value, from the light it may throw upon the physical conditions existing in the carboniferous period, and this opinion, coming from a scientist of such great authority and experience, should expand this field of inquiry, and in time lead to practical and valuable results.

The reason why these stones are thus found located in such phenomenal positions can only at present be surmised, as the subject is at present rather vague; but the theory has been adduced that they have been carried down by masses of floating vegetation in a manner similar to that recorded by travellers on the Amazon, where in the swamps and shallows such masses are seen floating, carrying foreign matter along with them. It has also been suggested that

there have been circumstances analogous to those at present in Siberia, where the plains—something like the old Coal Measure plains—are surrounded by lofty ice-covered mountains, and boulders are borne into these plains by glaciers. A leading London newspaper, in recently reporting a similar specimen, gravely alleged it to be a meteorite. This singular idea would, however, be instantly rejected by the most credulous novice as being utterly untenable. The matter has lately been twice brought up before the Geological Society of London, when interesting discussions took place. This report by Mr. Brownridge was rightly deemed by the members to be extremely valuable, the more so that the paper was accompanied by specimens of rocks composing the boulders. Thanks were expressed by the author to Messrs. W. Brogden and J. Parkin, of Messrs. Ingham and Sons, for their kindness in rendering every facility in furnishing the specimens.

NOTE—GEOLOGY.

Ancient and Modern : or, Scenes in the History of a Glacial Pebble.
 --Some two or three years ago when pulling down some old cottages near Driffild there was discovered at a considerable depth beneath the foundations a very fine specimen of an ancient British stone-hammer. This, however, appears to have attracted very little attention, for in a very short time it was cast on one side amongst other rubbish which was being carted away for the purpose of forming the foundation of a new road to a gentleman's house close by ; one of the men seeing this curious looking stone with a hole through it, thought that if he could only get a shaft in, it would do to break up the lumps of stone bricks and chalk that were too large to set without. Acting on the spur of the moment a shaft was procured and fixed into the head, the man at once commenced work, and to the astonishment of everyone it stood the test well, giving every satisfaction as though it had been made of iron. It has been used for similar purposes for above two years, and when rescued from its dangerous work it had apparently suffered very little misfortune, considering the rough work it had been put to. It is made out of a piece of Dark Blue Whinstone (probably an old glacial boulder from the coast), and has evidently been about 9 in. long, $3\frac{1}{2}$ in. square at the thickest end. The hammer with the shaft in has been presented to the Malton Naturalists' Society, and is now in their Museum, where it will be treasured amongst many other links in the history of the past.—S. CHADWICK, Malton, October 9th, 1887.

NOTE—POLYZOA.

Note on Paludicella Ehrenbergi.—Those who study the development of the freshwater Polyzoa may be interested in the discovery, at this season of the year, of the *Hybernaculum*, or resting-bud of this beautiful Polyzoan. I have for several years watched its development from the *Hybernaculum*, about the month of April, but have not till now seen it in the autumn, before the darker coating of deبرا had partly obscured its shape. No statoblasts having been found with this species, it seems pretty certain that the *Hybernaculum* (first discovered by Van Benedin) is the only means of development. The club-shaped terminating tubes have within them an oval semi-transparent kind of nucleus or cell, which evidently contains the resting germ, and supplies the place of the free statoblast of all the other species.—THOMAS SHEPHEARD, Ringsley Lodge, Chester, Dec. 1st, 1887.

NOTE—HYMENOPTERA.

Sirex juvenus at Hull.—A specimen of this insect was caught last August in Hull, in the vicinity of the Albert Dock, and is in my possession.—N. F. DOBRÉE, Beverley, E. Yorks, Jan. 16th, 1888.

Feb. 1888.

In Memoriam.

JOHN SANG.

THE North of England has for more than half a century been remarkable for the number of hard-working entomologists it has produced. For quite fifty years there has been an unbroken succession of them, keeping the northern district far in advance, entomologically, of any other part of the country, excepting the metropolis. Not among the very first of this band of workers, but still early in the field, was John Sang, whose death in the early part of last year left a gap that will not be easy to fill up. Though a native of the county of Durham, and best known for his work round Darlington, where he was born on March 3rd, 1828, and where he resided most of his life, he did not commence his entomological career there. In the year 1843 he went to Wakefield to 'serve his time' as a draper, and during the six years of his residence in that town were sown the seeds of that love of music and of entomology that afterwards filled up so much of his life. In 1848 he took a specimen of *Deilephila celerio*, on which he was accustomed to point with pride and pleasure as one of his most valued insects—valued especially because he had taken it himself. In 1849-50 he resided in Manchester, and during that year he began to study entomology in a more scientific manner than before, and also commenced the formation of a collection in earnest. On his return to Darlington he commenced business as a draper, ultimately realizing a modest competency, which enabled him to devote all his time to his favourite pursuits. In 1882 he had the misfortune not only to lose his savings, but he was obliged to part with his collection to enable him to meet an obligation he had incurred through becoming security for his brother-in-law. He then accepted an engagement with Dr. Mason, of Burton-on-Trent, to re-card the Rye collection of Coleoptera, and subsequently to figure Coleoptera and dissections. In this work he was still engaged at the time of his death. Such is a very brief account of his life. He was never married, residing with his sister till her death, and subsequently alone.

Perhaps the most remarkable thing about John Sang was his memory. When a boy he gave a proof of this by repeating the whole of a small History of England, and as a reward for this feat he was taught French and Latin, which were of great service to him subsequently in his entomological studies. Later in life he added German to these, and of all he had a very thorough knowledge. In his musical studies his memory served him so that he could sing or play the greater part of the twelve principal oratorios performed by

the Darlington Choral Society while he was secretary of it, without the score. In entomology his memory was truly wonderful. He knew the particulars of the occurrence of every rare species, where, when, and by whom each was taken, and in whose collection they now were. He knew the markings of even the most minute species, and would unhesitatingly point out an error in the figure of any of them. He knew the food of each, and was familiar with the earlier stages of many. These may not seem to be difficult of accomplishment when this is read, but no one who had witnessed any of John Sang's feats of memory can help wondering, not only at the accuracy of it, but at the quickness and readiness with which he could reply to any point that was raised. The writer first made Mr. Sang's acquaintance in the year 1859, when he called upon him with some insects he could not name. Mr. Sang took the box, and named them, one after the other, as fast as their names could be written down till he came to the last one. 'That one,' said he, 'I do not know. I never saw it before, but I'll tell you in a minute.' A book was produced, a page or two examined carefully, and the capture pronounced to be *Emmelesia unifasciata*, then a great rarity. The book, of course, was 'Stainton's Manual of Butterflies and Moths,' then just published.

In 1852 Mr. Sang commenced a diary, which he continued with more or less fulness till the year 1881. This diary is not by any means a model, for it is merely a list of species occurring at various localities at certain dates. To say there are no notes would be untrue, but they are very few indeed. 'May 15th, 1872—Coniscliffe Lane, *Gregonella* flying in sun, 3 to 4 p.m., worn,' is one of the very few where any record is made of the habits of an insect. 'Worn,' 'much worn,' 'late,' 'early,' and such like, are not of unfrequent occurrence. Under May 27th, 1874, there is—'Tees-side, Coniscliffe, *Tanacetana* flying freely in afternoon; try a week earlier still.' 'May 16th, 1869—Hellkettles, *paludum* (too small to take).' 'July 11th, 1869—Hellkettles, larvæ of *Resplendellum*, large mine on 18th' The fact evidently was that his memory was so thoroughly trustworthy that he did not need to make notes; he certainly was a very close observer, and could tell the habits of any species he had been in the habit of taking. Occasional notes are given on weather, thus: 'April 14th, 1875, Good Friday—last snow, a very severe week,' is a sample of many such notes. Once or twice he has been in too great a hurry to record the last snow, thus on April 22nd, 1860, he writes 'last snow'; then on May 29th the same year he records: 'Whit Monday, last snow, very heavy from 5.30 a.m. to 10 a.m.,' and to make the entry of April 22nd correct, he inter-

polates after 'last snow' the words 'but one.' The diary is carefully indexed, and contains records of the capture of 826 species. This is a surprising number, for no common things are recorded, thus fifteen butterflies only are entered, and but two sphinges. Mr. Sang never appears to have followed that course so customary now-a-days of collecting macros only to begin with. Even in 1853 the bulk of the entries in the diary are of *Tortrices* and *Tineina*. Residing at Darlington, on the borders of Durham, North Yorkshire was as convenient a collecting-ground as his own county, and those who have examined Mr. Porritt's valuable catalogue of Yorkshire Lepidoptera will know how very much it is indebted to John Sang for the North Yorkshire records. Richmond appears to have been his favourite collecting-ground in that county, but Redcar also had frequent visits. Nor was he altogether a stay-at-home collector. He appears to have visited one time or other, most of the best-known localities—the Isle of Man, West Wickham, Darenth, Gravesend, Dover, Folkestone, etc., etc., are all recorded. In 1871 he spent two days at Folkestone, August 2nd and 3rd, and he appears to have done an extraordinary work, having taken imagines of ten butterflies, fourteen macros, and twenty micros—in all, forty-four species in two days, common things not included. To attempt to enumerate or to classify his captures is not possible here. The North Yorkshire list, as said above, is incorporated in Mr. Porritt's work; the Durham captures yet require careful editing, which perhaps Mr. Gardner and I may do before long.

Mr. Sang was troubled with an internal complaint, which sometimes caused him much suffering, and often compelled him to stay at home when he would have preferred to be off in the woods and lanes. But he did not die from this, but from disease of the heart, which carried him off in his sleep, between Saturday, the 19th, and Sunday, the 20th March. He was buried in Darlington Cemetery, on Tuesday, March 22nd, 1887, beside his mother.

The name of John Sang will long be remembered in the North of England, and it will be handed down to future generations in *Gelechia sangiella*, which was named in his honour by his friend and fellow-worker, Mr. H. T. Stainton.—JOHN E. ROBSON.

NOTE—ORNITHOLOGY.

Albino Kittiwake at Flamborough.—Strange to relate, another white Kittiwake (*Rissa tridactyla*) has been shot at Flamborough this season about four or five miles south of the headland, on the 15th November, 1887, which fell to the gun of Mr. Thos. Leng, who is well known as a crack shot. I bought it. It is a splendid specimen, nearly perfect white, with the exception of a little tinge of very light drab on the primaries on the outer margin, also on the tips of the tail-feathers.—MATTHEW BAILEY, Flamborough, November 18th, 1887.

Naturalist,

DR. DAY ON BRITISH AND IRISH SALMONIDÆ.

‘British and Irish Salmonidæ.’ By Francis Day, C.I.E., F.L.S., F.Z.S., etc.
In one volume, with 12 plates. Williams & Norgate, London and Edinburgh,
1887.

NATURALISTS are well aware of the extent and nature of Dr. Day's contributions to the Ichthyological literature of our islands. He has given us what is now most deservedly recognised as the standard work on ‘British and Irish Fishes,’ and has contributed innumerable and valuable articles on his favourite science to the proceedings of the learned societies, and to the pages of serial literature. His latest work, now under our consideration, is devoted to the British and Irish Salmonidæ, a family the life-histories and the numerous varietal forms of whose species offer a subject full of difficult problems, worthy of the enthusiasm and the ability which the author is so well-known to possess.

It is quite impossible in the space at our disposal to give an adequate notion of the contents of this perfect mine of information on all matters worthy of attention appertaining to this most interesting family of our indigenous fishes; but we must allude to the great amount of matter that is new and original, or known only to the few possessing unusual advantages. In this connection we must not fail to express our own as well as our author's due appreciation of the indebtedness of ichthyologists to that worthy and enlightened baronet, Sir James Ramsay Gibson-Maitland, whose unrivalled fish-farm at Howietoun has been a nursery for many experiments, and the means of contributing not a little to our knowledge of the Salmonidæ, and also to the valuable art of fish-culture.

Commencing with the allusions of the classical and ancient writers to the Salmones, the author passes on to discuss the family's distribution in both time and space, its anatomical attributes, its culture, etc., etc., all of which are adequately treated, and in a manner leaving nothing to be desired.

It is, however, in dealing with the life-histories of the species that the book assumes, to our mind, its most important and interesting stage. The lordly Salmon alone has about one hundred pages devoted to an elaborate account of his engaging biography, to the results of experiments at the establishments for his artificial culture, and to fishery laws affecting him in the three kingdoms.

Then comes the Trout. The opening paragraph of this section is ominous of what is to follow. It is this—'it now becomes desirable to offer some remarks restricted to the marine and freshwater forms of the British Trout, which have been considered by some ichthyologists and fishermen to be anadromous and non-migratory freshwater species. Before entering upon each in detail it appears desirable to explain why it is that I find myself unable to accept the numerous species that have been described, believing those ichthyologists [Widegren, Malmgren, etc.] more correct who have considered them modifications of only one, which, as *Salmo trutta*, includes both anadromous and non-migratory freshwater forms.' We are quite aware that Dr. Day worked on these lines when he treated the Salmonoids in his 'British Fishes,' but we had not then the pleasure of making known our hearty approval of this departure, one that, we believe, does much to explain many of the puzzles which the recognition of a large number of distinct species inflicts upon us, and makes easy the solution of some vexed questions. Dr. Günther ('Catalogue of Fishes,' vol. vi; Study of Fishes, p. 644-5) describes eleven species of British Trout, and the fact that this accurate observer has been able to distinguish so many local forms in these islands is evidence of the variability of the species and nothing more. Although Dr. Day states—'it is, I think, possible to prove that marine salmonoids may take on a freshwater existence; also that *Salmo trutta*, *S. cambricus*, and other anadromous so-called species, can be traced into freshwater forms of trout,' we think, nevertheless, that the Sea-Trout and the Brown, or freshwater Trout may be regarded as now sufficiently distinct for the demands and convenience of zoological classification and nomenclature, respectively. Recognizing this split, and applying the useful trinomial nomenclature so appropriate to their respective varieties, our Trout stand as follows:—

SEA-TROUT.

Salmo trutta L., Salmon-Trout.

Salmo trutta cambricus Donovan, Sewin; this being simply a southern race of *Salmo trutta*.

To these forms also belong the Salmonoids known as *Salmo argenteus* C. & V., *Salmo brachypoma* Günther, and *Salmo eriox* Nilss.; also the Bull-Trout, Gray-Trout, Scurf, Sperling, Whitling, Sprod, Peal, Sea-Trout, White-fish, and White-Trout (Ireland), Turff (Devon), Buntlings (Wales), and Blue Cap, all of which are treated of, and their parentage and phase explained.

FRESHWATER TROUT.

Salmo fario L., Brown Trout.

Salmo fario levenensis Walk., Loch-Leven Trout.

Salmo fario — (no scientific name has been given to this race),
Crasspuill Trout.

Salmo fario estuarius Knox, Estuary Trout.

Salmo fario orcadensis Günth., Loch-Stennis Trout.

Salmo fario cornubiensis Walk., Cornish Trout.

Salmo fario ferox Jard. & Selby, Great Lake-Trout.

Salmo fario stomachicus Günth., Gillaroo Trout.

Salmo fario — (no scientific name has been given to this race),
the Swaledale, or more correctly speaking, the Oxnop, Trout.

All these forms are described and considered at length in the book.

In considering the CHAR, Dr. Day says, 'although Char do not differ so much in colour among themselves as do our Trout, partly owing to their not frequenting salt-water, still, at various ages, their forms are so diversified, and sexual distinctions so considerable, as to have deceived many ichthyologists who have studied these fishes more in museums than in their natural haunts. Fish-culture has, however, proved of great service in eradicating from systematic zoology a large number of species, which must, however, unfortunately continue for years encumbering the pages of ichthyological literature.' Günther ('Catalogue of Fishes,' vi; Study of Fishes, pp. 645-646) admits six species, but the above remarks of our author's make it doubtful if they are even varietal forms, and he only admits one species. He does not, however, explain the ages and sexes of his one species, *Salmo alpinus*, to which Dr. Günther's species are referable, which we should much like to know.

We think we have said enough to indicate that this work is one of unusual interest and worth, and if we have failed so to do, the fault is ours, and will be soon removed on an examination of the book itself, which is a most valuable contribution to the bibliography of our fauna. It is nicely got up, liberally illustrated with woodcuts, and last but not least it is embellished with a series of plates drawn by the author, nine of them being beautifully and faithfully coloured, thus adding not a little to the attractiveness of the book. We can only regret that the genera *Osmerus*, *Coregonus*, and *Argentina*, with their few species, are not included in this masterly survey, which is confined to the 'game fishes' of the family.—W. E. C.

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WM. EAGLE CLARKE.

Yorkshire.

Heliothis peltigera in Yorkshire [on the sandhills at Kilnsea, Holderness, just out of pupa, 16th Sep. 1885: new to Yorkshire fauna]. Ent. Mo. Mag., Oct. 1885, xxii. 106.

RICHARD COBY.

Lancashire.

Nyssia zonaria in Lancashire [at Crossens near Southport, many specimens; food-plant knapweed]. Ent., June 1886, xix. 158.

T. D. A. COCKERELL.

Yorkshire.

On Melanism [with a reference to *Eupithecia albipunctata* var. *angelicata* Prest, from Selby]. Ent., March 1887, xx. 58-59.

[J. A. COOPER].

Derbyshire.

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[MR. CROPPER].

Lancashire.

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ELIZABETH CROSS.

Lincolnshire.

Nemeophila plantaginis Double-brooded [in Lincolnshire, where it occurs in great numbers on the sandy warrens near Appleby]. Ent., Sep. 1886, xix. 231.

Yorkshire, Lincolnshire, Isle of Man, Lancashire,
Derbyshire, Durham, Northumberland.

C. W. DALE.

The History of our British Butterflies. [This is issued in the form of a separately-paged supplement to the 'Young Naturalist,' and enters in great detail into the whole history and range of the various species, collated from all possible sources of information. The Beverley records for *Papilio machaon* are given at pp. 5-6, and for *P. podalirius* at p. 7; Robson's record of a large flight of *Pieris brassicae* at Hartlepool is repeated at p. 15; *Gonepteryx rhamni* stated not to have been observed as Manx at p. 25; *Colias hyale* stated as having occurred as far north as York in 1842, and in Yorkshire and Lancashire in 1868, at pp. 35-6; absence of *Thecla betula* from Isle of Man, Yorkshire, Durham, and Northumberland, and its presence in Lancashire referred to at p. 39; absence of *T. w-album* from Isle of Man, and its occurrence at Melton Wood near Doncaster noted at p. 41; the fraudulent Yorkshire record of *T. pruni*, and its inclusion as a Derbyshire insect on the strength of one being in a box of captures within a few miles of Chesterfield, referred to at p. 43; Geo. Wailes' record of *Polyommatus argiolus* for Northumberland and Durham repeated at p. 56; *P. acis* noted for Yorkshire and Lincolnshire at p. 57; the presence of *P. corydon* in Lancashire and its absence from Yorkshire and Isle of Man noted at p. 65; detailed notices of the occurrence in Northumberland, Durham, Yorkshire, and Lancashire of *P. agestis*, and its varieties *artaxerxes*, *salmacis*, and *allous*, given at pp. 76-8; the absence of *Nemeobius lucina* from Northumberland, Durham, and the Isle of Man, and its presence in Westmorland and Cumberland, noted at p. 82; Yorkshire cited at p. 85 as the furthest northern locality for *Melanargia galathea*; increasing scarcity of *Hipparchia megera* since 1860 in the Durham district, and its presence in the Isle of Man, noted at p. 90; Manx occurrence of *H. semele* noted at p. 92; absence of *H. tithonus* from Isle of Man noted at p. 98; presence of var. *arete* of *H. hyperanthus* in Yorkshire, and the capture in Durham of two individuals of that species without any spot what-

ever, noted at p. 100; and at p. 101 the absence of the species from the Isle of Man; capture in Yorkshire by Mr. Watson of Haworth's original specimen of what is now var. *polydama* of *Cænonympha typhon*, and the occurrence of var. *philoxenus* ('the Manchester Ringlet') on Thorne Moor, Yorkshire, and commonly on Chat Moss, Lancashire, noted at p. 102, and at pp. 103 and 104 it is stated that some Cumberland specimens appear to be somewhat intermediate between vars. *laidion* and *philoxenus*; the absence of the species from Isle of Man is noted at p. 103; and on p. 104 somewhat lengthy details are given as to Yorkshire and Lancashire occurrences of the species and its varieties *laidion* and *philoxenus*. Young Nat., Supplements to the numbers for Feb., March, April, May, June, July, Aug., Sep., Oct., Nov., and Dec., 1887, at the pages cited above.

C. W. DALE.

Lancashire.

On the Variation of Species [with incidental references to Manchester *Chortobius davus*]. Young Nat., July 1885, pp. 150-152.

GEORGE DAWSON.

Cumberland.

Local Entomology. Part 4. Cuspidates. [Detailed notes on the distribution, habits, and life-history of the Notodontidæ, 17 species, occurring in Cumberland]. Trans. Cumb. and Westm. Assoc., 1883-84, vol. ix. pp. 201-209.

J. LYON DENSON.

Cheshire.

Abundance of A.[braxas] grossulariata [and of *Liparis auriflua*, in Cheshire, and scarcity of *Vanessa cardui*]. Nat. World, Dec. 1885, p. 232.

N. F. DOBRÉE.

Yorkshire.

Sphinx convolvuli [at Beverley, two, and in Hull, two]. Ent., Nov. 1887, xx. 303.

ROBERT DUTTON.

Yorkshire.

Sphinx convolvuli [three males and two females near York, Aug. 27th and 29th, Sep. 4th, 5th, and 7th]. Ent., Oct. 1887, xx. 272.

C. EALES.

Cumberland.

Sphinx convolvuli [at Carlisle, 31st Sep. (*sic*)]. Ent., Oct. 1887, xx. 272.

[THOS. EEDLE].

Lancashire.

Cænonympha typhon; Irish and Manchester specimens compared]. Young Nat., Nov. 1886, vii. 228.

JOHN W. ELLIS.

Lancashire, Cheshire.

Entomological Localities near Liverpool [a most valuable and useful paper, dealing with the lepidoptera and coleoptera which occur on the Lancashire coast sandhills, at Wallasey sandhills, at Bidston Hill, and on Simmonswood Moss; very numerous species cited with notices of their numbers and habitats]. Ent. Mo. Mag., Aug. 1886, xxiii. 57-63.

W. FINCH, jun.

Yorkshire.

Variety of Smerinthus populi [bred from a Scarborough larva; characterised by absence of markings]. Ent., May 1886, xix. 126.

J. GARDNER (Darlington).

Durham or Yorkshire (which?).

On the Identity of certain Agrotidæ [refers to *A. tritici* and *A. nigricans* occurring 'here,' and negatively to *A. obelisca* and *A. aquilina*]. Ent., June 1885, xviii. 166.

J. GARDNER.

Durham.

Chærocampa nerii at Hartlepool [on July 23rd, 1885]. Ent., Aug. 1885, xviii. 218; and Ent. Mo. Mag., Sep. 1885, xxii. 89.

J. GARDNER.

? Durham.

Tinea picarella bred [from fungi; locality not stated, but probably Hartlepool]. Ent. Mo. Mag., Sep. 1885, xxii. 90.

J. GARDNER.

? Durham.

Tinea picarella [bred from fungus; locality not stated]. Ent. Mo. Mag., July 1887, xxiv. 42.

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JOHN GARDNER.

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Obituary. John Sang [with notices of *Harpella bracteella* at Shotley Bridge; of *Miana exposita*; and of *Gelechia tetragonella* near Hartlepool]. Young Nat., April 1887, viii. 73-76.

JOHN GARDNER.

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JOHN GARDNER.

Durham, Yorkshire.

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[MR. GOLDTHWAITE].

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H. GOSS.

Yorkshire.

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HERBERT GOSS.

Lancashire, Westmorland.

Melanic Variation in Lepidoptera of High Latitudes [discusses *Cænonympha typhon* (*davus*) as an instance of species 'becoming paler the further we proceed north,' from his experience in Lancashire and Westmorland]. Ent., April 1885, xviii. 122.

C. S. GREGSON.

Lancashire, Yorkshire.

Notes on Variation in some Shetland Lepidoptera [refers to the variation of *Hepialus humuli* in Lancashire, and of other species in Lancashire and Yorkshire]. Young Nat., Jan. 1885, vi. 15-19.

C. S. GREGSON.

Cheshire, Isle of Man.

Entomological Nomenclature [with note of *Oxyptilus teucris*, from Delamere Forest, and Isle of Man]. Young Nat., Feb. 1885, vi. 34.

C. S. GREGSON.

Cheshire, Cumberland, Isle of Man.

Obituary. Nicholas Cooke [and his discoveries of Lepidoptera in the North of England]. Young Nat., June 1885, vi. 139-142.

C. S. GREGSON.

Cheshire, Lancashire, Westmorland, Cumberland.

Note on certain Agrotidæ [refers to colour-variation of Wallasey and Bidston Hill specimens of *Gnophos obscuraria*, and mentions Lancashire, Westmorland, Cumberland (where he took it recently) and Cheshire for *Agrotis similans* (*pyrophila*)]. Ent., June 1885, xviii. 165-166.

C. S. GREGSON.

Isle of Man.

Note [on Manx lepidoptera;] *Sciophila colquhounana*, *Eudorea lineolalis*, and an unknown species]. Young Nat., Sep. 1885, p. 215.

C. S. GREGSON.

Lancashire.

Three hours [collecting Lepidoptera] on the Sandhills at Crosby, near Liverpool, on Bank Holiday, Aug. 3rd, 1885 [numerous species cited]. Young Nat., Oct. 1885, vi. 234-5.

March 1888.

- C. S. GREGSON. **Lancashire, Cumberland, Cheshire.**
Notes on intermediate Varieties of Lepidopterous Insects [; of *Melitæa artemis* in N. Lancashire and near Liverpool; of *Chortobius davus* in Lancashire and Cumberland; of *Tephrosia biundularia* in Delamere Forest; *Chareas graminis* in Lancashire; and numerous other species whose localities are not given]. Young Nat., Nov. 1885, vi. 251-254.
- C. S. GREGSON. **Cheshire, Lancashire, Yorkshire.**
Notes on Lepidoptera . . . [discusses Lord Walsingham's views on melanism, illustrating by *Amphydasis betularia* in Cheshire, *Tephrosia biundularia* and *Boarmia repandata* in Delamere Forest, *Gnophos obscurata* at Bidston Hill. Cheshire, *Abraxas grossulariata* var. *varleyata* in Lancashire and Yorkshire; and *Tephrosia crepuscularia* at Barnsley]. Young Nat., Dec. 1885, vi. 276-278.
- C. S. GREGSON. **Lancashire, Cheshire, Westmorland.**
Variation in Lepidoptera. Intermediate Forms [of *Bombyx quercus* on the coast of Lancashire and Cheshire; of *Larentia didymata* at Windermere; and of *Amphydasis betularia* in Lancashire, Westmorland, and Cheshire]. Young Nat., April 1886, vii. 61-64.
- C. S. GREGSON. **? Yorkshire.**
Exceptional Proceedings of a Female [Dasypolia] Templi [sent by Mr. Harrison of Barnsley; the irregularity was in oviposition]. Young Nat., June 1886, vii. 127.
- C. S. GREGSON. **Lancashire.**
Rearing [Abraxas] Grossulariata and [Spilosoma] Lubricepeda (sic) [about eighty good varieties of the former bred from 4,000 larvæ; larvæ of latter fed upon *Aconitum napellus* were almost black]. Young Nat., Sep. 1886, vii. 192.
- C. S. GREGSON. **Isle of Man.**
Notes on Isle of Man Captures in June [1887; numerous species of Lepidoptera mentioned]. Young Nat., July 1887, viii. 138.
- C. S. GREGSON. **Isle of Man.**
A Day's 'Scientific' Insect-Hunting on the Isle of Man in June [1887; several species of Lepidoptera referred to]. Young Nat., Aug. 1887, viii. 153-155.
- C. S. GREGSON. **Lancashire.**
Eupithecia permutata at Liverpool [i.e., Formby and Whitbarrow Scar]. Young Nat., Sep. 1887, viii. 179.
- C. S. GREGSON. **Isle of Man, Cumberland, Westmorland, Furness.**
Note on some Varieties of Dianthæcia Consersa from North Wales and from Shetland [compared with specimens from various localities in the North of England]. Young Nat., Sep. 1887, viii. 178.
- C. S. GREGSON. **Lancashire.**
A Strange Larva on Cabbage [near Liverpool?—might possibly be *Botys urticalis*]. Young Nat., Sep. 1887, viii. 179.
 [In reply to this note, Geo. T. Porritt and Fred. Bond each write in the next number of Young Nat. (Oct. 1887, p. 203), suggesting that the unknown larva was that of *Pionea forficalis*].
- C. S. GREGSON. **Isle of Man.**
Polia nigrocincta bred [from Manx larvæ]. Young Nat., Sep. 1887, viii. 179.
- C. S. GREGSON. **Yorkshire.**
An Exceedingly Dwarfed Specimen of Tephrosia biundularia [taken by George Rose near Barnsley, June 1887]. Young Nat., Sep. 1887, viii. 181.
- C. S. GREGSON. **Lancashire.**
Semaria Wœberana [occurring at Mr. Gregson's house, Fletcher Grove, Liverpool, June 1887, on pear-trees]. Young Nat., Oct. 1887, viii. 203-204.

C. S. GREGSON and G. ROSE.

Yorkshire.

A Night's Sugaring in Wharnccliffe Wood, Yorkshire, in Aug. 1887 [the results were *Triphæna fimbria*, *Apamea connexa*, *Noctua glareosa*, *N. festiva*, *N. plecta*, *N. dahlui*, *N. baja*, *Cloantha solidaginis*, *Cosmia trapezina*, *Orthosia suspecta* and var. *congener*, and *Amphipyra tragopogonis*; *Cidaria immanata*, *Larentia didymata*, and *Euaoreia ulmiella* also taken; and unsuccessful search for *Cidaria reticulata* was made]. Young Nat., Oct. 1887, viii. 193-194.

JAMES GRIME.

Lancashire.

Plusia festucae [and its occurrence near Bolton, formerly in a few places, but now confined to one, and likely to become extinct from being too closely collected]. Ent., Aug. 1886, xix. 209.

A. E. HALL.

Yorkshire.

Hadena rectilinea [once very abundant near Sheffield; now quite extinct]. Ent., July 1886, p. 181.

A. E. HALL.

Yorkshire.

Apamea connexa [near Sheffield; inquiry as to discovery of larva]. Ent., Oct. 1886, xix. 252.

A. E. HALL.

Yorkshire.

Lepidoptera at Sheffield during 1886 [a most unsatisfactory season, but no species are mentioned or details given]. Ent., Feb. 1887, xx. 42.

A. E. HALL.

Yorkshire.

Zeuzera pyrina in March [on the 3rd March, 1887, in the town of Sheffield]. Ent., May 1887, xx. 137.

A. E. HALL.

Yorkshire.

Amphidasys betularia var. doubledayaria [near Sheffield: a query as to result of breeding this form]. Ent., July 1887, xx. 182.

A. E. HALL.

Yorkshire.

Migration of insects [reference to abundance of the three species of *Pieris* near Sheffield in 1887, and of *Colias edusa* there in 1877]. Ent. Mo. Mag., Dec. 1887, xxiv. 159.

A. E. HALL.

Yorkshire.

Xanthia aurago in October [close to Sheffield, 22nd Oct., 1887]. Young Nat., Nov. 1887, viii. 222.

J. HOWARD HALL.

Lancashire.

Sphinx convolvuli [a female in town of Bury. Sep. 2nd]. Ent., Oct. 1887, xx. 272.

[Mr. HALL].

Derbyshire.

[Variation in Derbyshire specimens of *Cleoceris viminalis* Fb. and *Xanthia fulvago* L.; exhibited to South London Ent. Soc., Feb. 18th, 1886]. Ent., April 1886, xix. 94; and Ent. Mo. Mag., April 1886, xxii. 267.

S. R. HALLAM.

Derbyshire.

Death's Head Hawk Moth (*Acherontia atropos*) [near Burton-on-Trent, five larvæ in Aug. 1885]. Nat. World, Oct. 1885, p. 197.

GEORGE A. HARKER.

Lancashire.

Chærocampa celerio at Crosby [near Liverpool; Sep. 16th, 1885]. Ent., Oct. 1885, xviii. 262.

G. A. HARKER.

Lancashire.

C[hærocampa] celerio at Crosley [misprint for Crosby near Liverpool, Sep. 16th, 1885]. Young Nat., Oct. 1885, p. 232.

J. HARRISON.

Yorkshire.

Cleoceris (*Epunda*) viminalis and *Melanippe tristata* [: black forms of former bred, and second brood of latter near Barnsley]. Ent., Sep. 1885, xviii. 244.

March 1888.

- JOHN HARRISON. Yorkshire, Derbyshire.
Tephrosia crepuscularia and *T. biundularia* [their differentiation; and their variation and occurrence near Barnsley and in Derbyshire]. Ent., June 1886, xix. 159-161.
- JOHN HENDERSON. Yorkshire, Lancashire, ? Cheshire.
 The Buckler Collection [contained *Erebia blandina* from Yorkshire eggs; *Chortobius davus* from Chat Moss; and *Sesia culiciformis* from J. Steele, of Congleton]. Young Nat., May 1886, vii. 92-96.
- G. M. A. HEWETT. Nottinghamshire.
Smerinthus ocellatus at South Searle, Newark, unusually abundant; details given]. Ent., Oct. 1886, xix. 250.
- G. M. A. HEWETT. Nottinghamshire.
Acronycta aceris [a second brood at South Searle, Newark; details given]. Ent., Oct. 1886, xix. 251.
- JOHN HILL. Derbyshire.
Hybernina defoliaria [at Little Eaton, near Derby, in February, unusually late]. Young Nat., March 1885, vi. 71.
- JOHN HILL. Derbyshire.
Colias Hyale [at Babbington near Ilkeston, July 4th, 1885]. Young Nat., Aug. 1885, vi. 191-192.
- JOHN HILL. Derbyshire.
 Notes on the Variation of [31 species of] Lepidoptera taken near Derby. Ent. Mo. Mag., June 1886, xxiii. 5-7.
- JOHN HILL. Derbyshire.
 Taking lepidoptera on Grass Stems, etc. [55 species referred to as thus found in the Derby district]. Young Nat., Jan. 1887, viii. 4-6.
- J. B. HODGKINSON. Westmorland and Furness.
 Habits of *Ephippiphora tetragonana* [at Windermere]. Ent. Mo. Mag., March 1885, xxi. 235.
- J. B. HODGKINSON. Derbyshire.
Bryophila algæ [two in Sidebotham's collection were taken at Strines (Marple); brief history given]. Ent., April 1885, viii. 122.
- J. B. HODGKINSON. Westmorland or Furness.
 The Home of *Cidaria reticulata* [on the borders of Windermere Lake in Lancashire, where it first occurred in 1856 to author and T. H. Allis, and where it feeds on *Impatiens noli-me-tangere*; its great scarcity stated and history given]. Ent. Mo. Mag., Sep. 1885, xxii. 91-92.
- J. B. HODGKINSON. Lancashire, Westmorland, Furness.
 Stray Notes from Preston [referring to numerous species at Windermere, Grange, Witherslack, and Blackpool]. Ent., Oct. 1885, xviii. 266.
- J. B. HODGKINSON. Westmorland or Furness.
Nepticula myrtillella feeding on *Polypody* [near Windermere]. Ent., Feb. 1886, p. 43.
- J. B. HODGKINSON. Westmorland or Furness.
 Absence of *Cidaria reticulata* [from its accustomed haunts]. Ent., Feb. 1886, xix. 43.
- J. B. HODGKINSON. Lancashire.
Trifurcula pallidella and *Genista tinctoria* [at Dutton near Ribchester, where it was first discovered as British by Mr. Hodgkinson in 1879]. Ent. Mo. Mag., Jan. 1880, xvi. 186; and June 1886, xxiii. 15.
- J. B. HODGKINSON. Westmorland and Furness, Lancashire.
Gelechia ossella at Arnside [and Grange, in 1880 and 1883]. Ent., Sep. 1886, xix. 233.

- J. B. HODGKINSON. Westmorland and Furness.
Chrysoclysta bimaculella at Windermere [where also occurs *Nepticula intimella*]. Ent., Sep. 1886, xix. 233.
- J. B. HODGKINSON. Yorkshire.
Apamea connexa in Scotland [the original British locality stated to be near Barnsley]. Ent., Sep. 1886, xix. 231.
- J. B. HODGKINSON. Lancashire, Westmorland or Furness.
Miana captiuncula (expolita) at Arnside [and at Windermere; in fair quantity]. Ent., Oct. 1886, xix. 253.
- J. B. HODGKINSON. Lancashire, Westmorland, Cumberland, I. of Man.
Micro-Lepidoptera in 1886 [near Preston, at Arnthwaite near Carlisle, at Morecambe Bay, at Windermere, at Arnside, and in the Isle of Man; numerous species cited]. Ent., Oct. 1886, xix. 244-246.
- J. B. HODGKINSON. Lancashire, Durham or Yorkshire, Isle of Man.
Notes upon Nepticulidæ [near Preston, Southport, Darlington, Port Erin, etc.; numerous species cited]. Ent., Oct. 1887, xx. 251-253.
- W. F. DE V. KANE. Yorkshire.
Some Notes on the Comparative Study of British and Continental Rhopalocera [; with a passing allusion to the dark-brown Yorkshire *Cænonympha typhon* with numerous and large ocelli]. Ent. Mo. Mag., April 1887, xxiii. 247.
- R. KAY. Lancashire.
Sphinx Convolvuli at Bury [Sept. 13th, 1885]. Ent., Nov. 1885, xviii. 295.
- H. WALLIS KEW. Lincolnshire.
In the Woods in April [*Melanargia galathea*, *Gonepteryx rhamni*, *Euchelia jacobææ*, and *Polyommatus phlœas* mentioned as occurring near Louth]. Sci. Goss., April 1886, pp. 78-79.
- H. WALLIS KEW. Lincolnshire.
The Sea Banks of the Lincolnshire Coast [*Euchelia jacobææ*, *Lasiommata megera*, *Cynthia cardui*, and *Vanessa urticaæ*, noted as common at Mablethorpe]. Nat. World, Jan. 1885, ii. 10.
- H. WALLIS KEW. Lincolnshire.
Nature near Louth, East Lincolnshire [Localities given for *Euchelia jacobææ*, *Melanargia galathea*, *Melitæa artemis*, *Euclidia glyphica*, and *Colias edusa*]. Nat. World, Feb. 1885, ii. 24-25.
- H. WALLIS KEW. Lincolnshire.
The Clouded Yellow (*Colias edusa*) [very abundant near Louth in 1877, not seen since]. Science Gossip, July 1885, p. 165.
- H. WALLIS KEW. Lincolnshire.
Mablethorpe [Lepidoptera; five species enumerated as seen June 6th]. Nat. World, July 1885, p. 137.
- H. WALLIS KEW. Lincolnshire.
Louth Naturalists' Society [Pearl-bordered Fritillary (*Argynnis euphrosyne*) on May 25th, at Burwell]. Nat. World, Aug. 1885, p. 155.
- H. WALLIS KEW. Lincolnshire.
Rambles near the Coast [at Mablethorpe, Theddlethorpe, and Saltfleet: notices of six lepidoptera]. Nat. World, Oct. 1885, pp. 188-190.
- H. WALLIS KEW. Lincolnshire.
[Colias edusa near Louth in 1877]. Nat. World, Dec. 1885, p. 221.
- H. WALLIS KEW. Lincolnshire.
Woodland Rambles in Lincolnshire [in Haugham and Maltby Woods, 23rd April and 1st May, 1886; *Vanessa io*, *Melanargia galathea*, and *Diurnea fagella* noted]. Young Nat., July 1886, vii. 129-131.

H. WALLIS KEW.

Lincolnshire.

Field Notes. No. 12. Natural History Odds and Ends. [*Dicranula vinula* at Louth; notes on its pupation; *Tortrix viridana* and *Noctua brunnea* near Louth]. Nat. World, Dec. 1886, p. 221-222.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. Lanc., Cheshire.

Abstract of the Session [referring to *Heliothis peltigera*, Wallasey; and *Laphygma exigua*, Crosby]. Eighth Annual Report, Lancashire and Cheshire Ent. Soc., 1885, p. 5.

B. LOCKYER.

Yorkshire, Cheshire.

Notes on Lepidoptera [with reference to *Argynnis paphia* var. *valezina*, *A. adippe*, and *Smerinthus populi*, all near Whitby]. Young Nat., Aug. 1886, vii. 163-165. [*Bombyx rubi*, moors and lanes near Whitby, common as larva in Aug.; *B. quercus* (*callunæ*), larva common on the moors near Whitby, Aug. 1866; *Saturnia carpini*, larva common on the Yorkshire moors, Aug. 1866]. Young Nat., Sep. 1886, vii. 189-190. [*Dicranura vinula* at Whitby in 1866, and *Notodonta ziczac* at Whitby]. Young Nat., Dec. 1886, p. 244. [*Acronycta rumicis* at Birkenhead]. Young Nat., Jan. 1887, viii. 22. [*Anarta myrtilli* at Whitby]. Young Nat., June 1887, viii. 103.

W. LÖWENBERG.

Etymology of 'Oubit.' [The hairy caterpillars of the Tiger-moths (*Arctiadeæ*) are called 'Oubuts' by the English Northern men, as Ed. Topsell in his History of Serpents, 1607, p. 665 (1653 ed.), says]. Notes and Queries, March 14th, 1885, 6th S. xi. 217.

JOHN MACKAY.

Cumberland, Durham, Lancashire, Northumberland.

Vanessa polychloros in . . . Argyllshire [with illustrative reference to its Northern English distribution]. Young Nat., Sep. 1887, viii. 176.

PHILIP B. MASON.

Derbyshire.

Semaria Wœberana [occurs freely in Mr. Mason's garden at Burton-on-Trent; food-tree stated]. Young Nat., Nov. 1887, viii. 223.

T. MELDRUM.

Yorkshire.

Early Emergence of C[irrhœdia] Xerampelina [9th Aug. at Ripon; all over by 22nd Aug., which is the usual time]. Young Nat., Oct. 1887, viii. 203.

THOMAS MELDRUM.

Yorkshire.

Ennomos fuscantaria [bred from larva found in Newby Park, Ripon; details given]. Young Nat., Nov. 1887, viii. 223.

H. MURRAY.

Furness.

Breeding Botys terrealis [from Grange larvæ]. Ent., Oct. 1886, xix. 255.

H. MURRAY.

Lake District.

Breeding Cidaria reticulata and Penthina postrema [from Lake District larvæ; details of food-plant, etc., given]. Ent., Oct. 1886, xix. 251-252; also see Young Nat., Jan. 1887, viii. 15.

H. MURRAY.

Lancashire.

Sphinx convolvuli [three specimens, all worn, and one of *Charocampa celerio*, at Carnforth]. Ent., Dec. 1887, xx. 324.

R. NEWSTEAD.

Cheshire.

Sesia tipuliformis [and how to find the larvæ: incidentally refers to Chester experience]. Ent., April 1886, p. 90.

ROBT. NEWSTEAD.

Cheshire.

Macaria liturata, Variety [from Delamere Forest, roughly described]. Ent., Oct. 1887, xx. 279.

J. E. NOWERS.

Derbyshire.

Acherontia atropos at Burton-on-Trent [an imago at Branstone Junction, Sep. 28th, 1885, a pupa a few days before, and several larvæ in and about the town during the year]. Ent., Dec. 1885, xviii. 317.

STEPHEN PEGLER.

Nottinghamshire.

Chærocampa celerio at Retford [in November 1884]. Ent., April 1885, xviii. 121. [Another occurrence]. Ent., Nov. 1885, xviii. 293.

F. N. PIERCE.

? Lancashire or Cheshire.

A New Geometer [*Oporabia approximaria* Gregs., sp. nov. ; not described ; locality not stated]. Young Nat., Feb. 1885, vi. 48.

F. N. PIERCE.

Lancashire, Cheshire.

Butterflies around Liverpool [Notes on the unusual occurrence of *Vanessa cardui*, *V. atalanta*, *V. io*, *Satyrus megæra*, and *S. ageria* in 1884]. Young Nat., April 1885, vi. 92-93.

F. N. PIERCE and G. A. HARKER.

Cheshire.

Easter at Hartford [numerous lepidoptera enumerated as captured]. Young Nat., June 1885, pp. 120-123.

F. N. PIERCE.

Lancashire, Cheshire.

Are Butterflies disappearing from the British Isles? [refers to *Argynnis aglaia* occurring at Southport in profusion in 1884, and not found at all in 1885 ; to *Vanessa io* in various Lancashire and Cheshire localities ; and to *Satyrus megæra* not having decreased in 1885 as compared with 1884, in Cheshire and Lancashire]. Young Nat., Nov. 1885, vi. 260.

F. N. PIERCE.

? Lancashire.

Variety of *Triphæna pronuba* [varying in colour of left posterior wing ; bred]. Ent., May 1886, xix. 128 ; also see note with same heading in Young Nat., Aug. 1885, vi. 192.

F. N. PIERCE.

Durham.

Notes on a Holiday in Suffolk [with comparison of Durham and Suffolk *Crambus perlellus* at p. 214]. Young Nat., Nov. 1886, vii. 213-218.

GEO. T. PORRITT.

Yorkshire.

Further Notes on British Pterophoridae [; referring to the habits of *Pterophorus monodactylus*, *P. acanthodactylus*, and *P. bipunctidactylus*, as observed near Huddersfield]. Ent. Mo. Mag., Feb. 1885, xxi. 207-8.

GEO. T. PORRITT.

Yorkshire.

Arctia mendica feeding on Birch [in Green Farm Wood near Doncaster, where *Phycis betulella* in plenty and a few *Coleophora currucipennella* were also taken]. Ent., June 1885, xviii. 194.

GEO. T. PORRITT.

Yorkshire.

Heliothis peltigera, etc., in Yorkshire [taken by W. E. Clarke at Kilnsea in Holderness, Sep. 6th, and new to Yorkshire Fauna ; *H. marginata*, larvæ near Scarborough, Aug. 31st ; *Sphinx convolvuli* in Huddersfield town, Aug. 22nd]. Ent., Oct. 1885, xviii. 264.

GEO. T. PORRITT.

Lancashire.

Lepidoptera at Southport [in mid-Aug. 1885 : refers to *Agrotis tritici*, *A. aquilina*, *A. obelisca*, occurring together along with *A. vestigialis* (*valligera*), *A. cursoria*, and *A. præcox* ; also *Phytometra cinea* and *Leucoma salicis*]. Ent., Nov. 1885, xviii. 300.

[G. T. PORRITT.]

Lancashire.

[Melanic variety of an *Agrotis*, probably *Agrotis obelisca* Hübn., taken at Southport ; exhibited to Ent. Soc.] Proc. Ent. Soc. Lond., Dec. 2nd., 1885, p. xxxiii. ; Ent. Mo. Mag., Jan. 1886, xxii. 188.

G. T. PORRITT.

Yorkshire.

Bryotropha [Gelechia] politella in Yorkshire [common near Greenfield]. Ent., Jan. 1886, xix. 16.

- G. T. PORRITT. Yorkshire.
Description of the Larva of *Scoparia angustea*, Curt. = *coarctalis*, Zell. [taken abundantly on Huddersfield Cemetery wall: details of capture and life-history given]. Ent. Mo. Mag., Feb. 1886, xxii. 209-210.
- GEO. T. PORRITT. Yorkshire.
Food of the Larva of *Polia flavicincta* [an abundant species about Huddersfield, feeding on low plants in great variety]. Ent., May 1886, xix. 128.
- GEO. T. PORRITT. Yorkshire.
Melanism in *Hibernia progemmaria* and *Diurnea fagella* [near Huddersfield: evidence that dark forms are much commoner than formerly]. Ent. Mo. Mag., July 1886, xxiii. 40-41.
- G. T. PORRITT. Yorkshire.
Spilodes palealis in Yorkshire [near Whitby: new to Yorkshire list]. Ent., Oct. 1886, xix. 255.
- GEO. T. PORRITT. Yorkshire.
Pterophorus dichrodactylus and *P. Bertrami* [at Saltburn-by-the-Sea: details of occurrence in August]. Ent. Mo. Mag., Dec. 1886, xxiii. 163.
- GEO. T. PORRITT. Yorkshire.
[Variation in *Cidaria suffumata* and *Hypsipetes elutata* at Huddersfield: specimens exhibited to Ent. Soc. London, Dec. 1st, 1886.] Trans. Ent. Soc. Lond., 1886, p. lvii; also Ent. Mo. Mag., Jan. 1887, xxiii. 192; Ent., Jan. 1887, xx. 21; and Young Nat., Jan. 1887, viii. 14.
- GEO. T. PORRITT. Yorkshire.
[Variation in Huddersfield examples of *Hibernia progemmaria*, and the increase of melanism.] Proc. Ent. Soc. Lond., April 6th, 1887; Ent. Mo. Mag., May 1887, xxiii. 280; Ent., May 1887, xx. 140; Young Nat., May 1887, viii. 87.
- [GEO. T. PORRITT.] Yorkshire.
[Melanic varieties of *Diurnea fagella* from Huddersfield, exhibited to Ent. Soc. Lond., Oct. 5th, 1887; the typical pale form had almost disappeared from the neighbourhood.] Ent., Nov. 1887, xx. 310; Ent. Mo. Mag., Nov. 1887, xxiv. 140; Young Nat., Nov. 1887, viii. 216.
- [G. T. PORRITT.] Durham.
[Dark Form of *Crambus perlellus* being exhibited to Ent. Soc. Lond., October 5th, 1887, Mr. Porritt remarked that this brown form occurred at Hartlepool with the ordinary typical form of the species, and was there regarded as only a variety of it.] Ent. Mo. Mag., Nov. 1887, xxiv. 139; Ent., Nov. 1887, xx. 309; Young Nat., Nov. 1887, viii. 215.
- G. PULLEN. Derbyshire.
[Lepidopterous] Notes from Derby [*Acronycta rumicis*, *A. alni*, *Pygma bucephala*, *Eupith. nanata*, *Anarta myrtilli*, *Agrotis porphyrea*, *Acherontia atropos*, *Sphinx convolvuli*, and *Cirrhædia* mentioned, with details]. Young Nat., Oct. 1885, p. 238.
- E. L. RAGONOT. Cheshire, Yorkshire.
Revision of the British Species of Phycitidæ and Galleridæ. [*Homocoma saxicola* Vaugh., stated to be apparently the most frequent form of *nimbella* in England: writer has it from Yorkshire, Cheshire, etc.] Ent. Mo. Mag., July 1885, xxii. 26.
- L. R[ICHARDSON] and B. B. L. T[ALL]. Yorkshire.
York: Bootham School News [Excursion, June 4th, Whitby; four species of lepidoptera named]. Nat. Hist. Journ., June 15th, 1885, p. 95.

L. RICHARDSON.

Yorkshire, Northumberland.

Holiday Captures [; *Amphidasis betularia* near Sheffield; *Chelonia plantaginis* at Sleights. near Whitby; *Plusia interrogationis* near Hexham; *Sesia bembeciformis* at Newcastle-on-Tyne]. Nat. Hist. Journ., Sept. 15th, 1885, p. 122.

GEORGE ROBERTS.

Yorkshire.

Topography and Natural History of Lofthouse and its Neighbourhood [etc.]. Vol. II. Leeds: printed for the author. 1885 [pp. viii. + 258]. [Blue Butterflies (p. 27); *Vanessa atalanta* (p. 91); *V. urticae* (pp. 91, 107, 116, 132, 135, 150); various moths (p. 93); *Vanessa io* (pp. 94, 100); *Colias edusa* (p. 95); *Cynthia cardui* (p. 110); White Butterflies (pp. 132, 133, 135, 136, 137); *Pieris rapæ* (p. 138); Tiger-moths (p. 149); *Pieris brassicae* (p. 150); Burnet-moth (p. 151); *Cerura vinula* (p. 151); *Saturnia carpi* (p. 151); *Pygæa bucephala* (p. 151); dotted border and spring usher moths (p. 157); *Vanessa urticae* (p. 158-161); White Butterfly (p. 158-161); *Anthocharis cardamines* (p. 161); *Satyrus janira* (p. 161); Burnet-moth (p. 161); *Ino statice* (p. 161); Large Heath Butterfly (p. 161).

JOHN E. ROBSON.

Yorkshire.

A Catalogue of British Lepidoptera and their named varieties [*Cidaria suffumata* var. *piceata* Haw., Huddersfield]. Young Nat., Jan. 1885, vi. 14.

JOHN E. ROBSON.

Durham, Yorkshire.

Are Butterflies disappearing from the British Isles? [refers to *Vanessa antiopa* at Castle Eden, *Colias edusa* in Durham, *Papilio machaon* at Beverley, *Argynnis aglaia* in Castle Eden Dene, *Vanessa C.-album* at Hartlepool, *V. io*, *Satyrus ægeria*, *S. megæra*, *S. hyperanthus*, *Lycæna alsus*, and *Hesperia sylvanus* in Durham, and *Chortobius pamphilus* in the West Riding]. Young Nat., March 1885, vi. 59-65.

JOHN E. ROBSON.

? Durham.

Variety of *Cœnonympha pamphilus* [described; locality not stated, presumably near Hartlepool]. Young Nat., July 1885, vi. 168.

JOHN E. ROBSON.

Durham.

***Chærocampa nerii* at Hartlepool** [July 23rd, 1885]. Young Nat., Aug. 1885, vi. 192.

JOHN E. ROBSON.

Yorkshire, Durham, Lancashire.

Are butterflies disappearing from the British Isles? Young Nat., Aug. 1885, vi. 179-184.

JOHN E. ROBSON.

Durham.

***Sphinx convolvuli* at Hartlepool** [21st Aug. 1885]. Young Nat., Sep. 1885, vi. 216.

JOHN E. ROBSON.

Durham.

Rare Hawk Moths at Hartlepool [in unusual number; instances given of *Sphinx convolvuli* (several), *Acherontia atropos* (two), *Chærocampa celeris* (one); and reference to former occurrence of *Deilephila galii* and *D. livornica*]. Young Nat., Oct. 1885, vi. 239.

[J. E. ROBSON.] Durham, Yorksh. [error], Northumb. ? Lancash. or Chesh.

1885 [; being an account of the year's additions to the British lepidopterous fauna; *Gelechia tetragonella* Stainton, from Tees mouth near Greatham, details given, and error in original record (Ent. Mo. Mag., Oct. 1885, p. 99) corrected; Mr. Gregson's *Oporabia approximaria* considered a good species; a new unnamed *Nepticula* found near Newcastle-on-Tyne by J. Sang]. Young Nat., Jan. 1886, vii. 2-3.

J. E. ROBSON.

Durham.

The Death's Head [*Acherontia atropos*] **at Hartlepool** [one, a female, 22nd May, taken on a fishing-boat, and another, two days later, on the rocks]. Young Nat., June 1886, vii. 128.

March 1888.

- [J. E. ROBSON.] Yorkshire.
Review. The Lepidoptera of Dorsetshire. By C. W. Dale [comparisons are made with Porritt's Yorkshire list, the latter having thirty-nine species more than Dorsetshire]. *Young Nat.*, July 1886, vii. 141-143.
- J. E. ROBSON. ? Durham.
Variety of *Zygæna filipendulæ* [with the usual spots and the hind wings a dull dark pink; presumably from near Hartlepool]. *Young Nat.*, Sep. 1886, vii. 192.
- JOHN E. ROBSON. Durham.
On the specific distinctness of *Tephrosia crepuscularia*, W.V. and *biundularia*, Esp. [and their occurrence in co. Durham]. *Ent. Mo. Mag.*, Oct. 1886, xxiii. 111-112.
- J. E. ROBSON. Durham, Cheshire.
***Agrotis aquilina*, tritici, etc.** [their differentiation; and occurrence in Durham and Cheshire]. *Young Nat.*, Oct. 1886, vii. 209-210.
- J. E. ROBSON. ? Durham.
On the flight and pairing of *Hepialus hectus* and *humuli* [in co. Durham?]. *Ent. Mo. Mag.*, Jan. 1887, xxiii. 186.
- JOHN E. ROBSON. ? Durham.
On the flight and pairing of *Hepialus sylvinus* and *lupulinus* [also *H. zellæda* and *H. humuli*]. *Ent. Mo. Mag.*, Feb. 1887, xxiii. 214-215.
- JOHN E. ROBSON. Durham, Northumberland.
***Lycæna agestis*, W.V.** [a full account of its variation and life-history]. *Young Nat.*, May 1887, viii. 81-87.
- JOHN E. ROBSON. Durham.
A dwarf specimen of *Cabera pusaria* [taken in Hezledon Dene: barely ten lines in expanse]. *Young Nat.*, Sep. 1887, viii. 179.
- JOHN E. ROBSON. Durham.
White Butterflies [have been in most unusual numbers round Hartlepool for the past two months; *Pieris brassica*, *P. rapæ*, and *P. napi* mentioned, also *Mamestra brassica*]. *Ent. Mo. Mag.*, Oct. 1887, xxiv. 112.
- JOHN E. ROBSON. Durham.
***Luperina Cespitis* in the County of Durham** [two former records recited]. *Young Nat.*, Oct. 1887, viii. 202.
- JOHN E. ROBSON. Yorkshire.
C[irrhædia]. *Xerampelina v. Unicolor* [taken near Ripon in 1887, by T. Meldrum, and now in Mr. Robson's collection]. *Young Nat.*, Nov. 1887, viii. 223.
- JOHN E. ROBSON. Yorkshire.
Melanic Variety of *Melanippe Montanata* [taken by Mr. Waite, June 1886, in a lane near Ripon]. *Young Nat.*, Nov. 1887, viii. 223.
- J. T. RODGERS. Lancashire.
Lepidoptera observed in the neighbourhood of Oldham, in 1884 [thirty-four species enumerated]. *Young Nat.*, March 1885, p. 69.
- ARTHUR J. ROSE and OLIVER C. GOLDTHWAITE. Westmorland.
Nine Days at Rannoch [Comparison of Rannoch and Witherslack *Cano-nympha typhon (datus)* at p. 134]. *Ent.*, May 1885, xviii. 134.
- GEORGE ROSE. Yorkshire.
Sphinx Convolvuli [near Barnsley: several from Aug. 28th to Sept. 30th]. *Ent.*, Nov. 1887, xx. 303.
- GEORGE ROSE. Yorkshire.
[*Sphinx*] *Convolvuli* in Yorkshire [near Barnsley, ten; details given]. *Young Nat.*, Oct. 1887, viii. 202.

- [Mr. ROSE.] Lake District.
[Exhibition of Lake District specimens of *Boarmia repandata*, South London Ent. Soc., Nov. 4th, 1886]. Ent., Dec. 1886, xix. 307; Ent. Mo. Mag., Dec. 1886, xxiii. 167.
- M. ROUTLEDGE. Cumberland.
Sphinx convolvuli [at Stone House, Carlisle, one, Sep. 6th, 1887]. Ent. Oct. 1887, xx. 272.
- JAMES H. ROWNTREE. Yorkshire.
***Acronycta alni* near Scarborough** [near Seamer Beacon, June 25th, 1887]. Ent., Oct. 1887, xx. 275.
- J. H. SALTER. Yorkshire.
Scarborough [lepidoptera; one butterfly and four moths noted]. Nat. Hist. Journ., May 15th, 1885, p. 79.
- REGINALD E. SALWEY. Yorkshire.
Is *Deiopeia pulchella* permanently established in Britain? [with a reference to its capture at Acomb, Yorkshire]. Ent., July 1886, xix. 169-172.
- L. L. SAMUELS. Lancashire.
Moth Trap [and results of its use in Manchester; seven common lepidoptera named]. Ent., May 1886, xix. 139.
- J. SANG (Darlington). ? Durham or Yorkshire.
Occurrence of *Sciaphila abrasana* [no locality given; taken in Aug. 1884]. Ent. Mo. Mag., Jan. 1885, xxi. 192.
- J. SANG (Darlington). ? Durham or Yorkshire.
***Ephippiphora tetragonana* bred** [from larvæ found 'on the coast']. Ent. Mo. Mag., Jan. 1885, xxi. 191.
- J. SANG. ? Durham or Yorkshire.
Late appearance of *Hepialus humuli* [A female netted at the end of Aug. in fine condition but pale coloured and very small; locality not stated, probably near Darlington]. Ent., Jan. 1885, xviii. 21-22.
- J. SANG. ? Northumberland, Durham.
A new (?) *Nepticula* larva [mining *Potentilla tormentilla* near Newcastle-on-Tyne, and surmised to be either *N. tormentilla*, new to Britain, or an undescribed species]. Ent. Mo. Mag., Nov. 1885, xxii. 138.
- J. SANG. ? Durham or Yorkshire, Isle of Man.
***Butalis fusco-cuprea* bred** [from *Lotus corniculatus* in the Isle of Man; occurs on railway-banks near Darlington]. Ent. Mo. Mag., March 1886, xxii. 239.
- J. SANG. ? Durham or Yorkshire.
Longevity of the larva of *Nepticula apicella* [near Darlington?]. Ent. Mo. Mag., March 1886, xxii. 236.
- J. SANG. Durham.
***Lithocolletis sorbi*, Frey** [in upper Weardale, 1854; details of capture and life-history given; *L. pomifoliella*, *L. spinicolella*, and *Argyresthia spinella*, also referred to]. Ent. Mo. Mag., April 1886, xxii. 262.
- W. G. SHELDON. Derbyshire.
On *Xanthia fulvago* var. *flavescens* [at Breadsall Moor near Derby, etc.]. Ent., Oct. 1887, xx. 277-278; Young Nat., Nov. 1887, viii. 219.
- [Mr. SHELDON.] Derbyshire.
[*Xanthia fulvago* L. and var. *flavescens* Esp., exhibited to South Lond. Ent. Soc., Sep. 22nd, 1887, with remarks on 'the number of melanic specimens which he had observed in a particular valley in Derbyshire']. Ent. Mo. Mag., Nov. 1887, xxiv. 138, Ent., Nov. 1887, xx. 311.

- [W. G. SHELDON.] Derbyshire.
 [A series of about 25 *Tephrosia biundularia* Bork. from Derbyshire, exhibited to South Lond. Ent. Soc., Nov. 10th, 1887]. *Young Nat.*, Dec. 1887, viii. 234.
- [Mr. SHELDON.] Derbyshire.
 Haggerston Entomological Society [discussion on *Argynnis paphia*; Mr. Sheldon had met with it in Derbyshire]. *Young Nat.*, May 1885, vi. 111-112.
- W. G. SHELDON. Yorkshire.
 Notes on *Scoparia angustea* [with references to Porritt's experience at Huddersfield]. *Ent.*, Dec. 1887, xx. 318-320.
- W. G. SHELDON. Derbyshire.
 Lepidoptera of Derbyshire [notes on numerous species captured round Little Eaton, on Breadsall Moor, at Repton, and at Lathkill Dale, from June 8th to 18th, 1885]. *Ent.*, Dec. 1885, xviii. 318-319.
- W. G. SHELDON. Derbyshire.
 Retarded appearance of Lepidoptera [*Thera variata* out early in June in Derbyshire, abundant up to 26th Sep. in Surrey]. *Ent.*, Dec. 1885, xviii. 323.
- JOHN SIM. Northumberland.
 Objects of Interest in our Pit District [of Northumberland; several butterflies cited by their English names]. *Sci. Goss.*, Feb. 1885, pp. 31-32.
- G. A. SMALLWOOD. Lancashire.
Tephrosia crepuscularia and *T. biundularia* [their differentiation, and occurrence of the latter near Manchester and Warrington]. *Ent.*, June 1886, p. 162.
- G. A. SMALLWOOD. Derbyshire, Yorkshire.
 The Life-History of *Tephrosia crepuscularia* (or *biundularia*) [reference to Barnsley specimens]. *Ent.*, Nov. 1886, xix. 266-269.
- RICHARD SOUTH. Yorkshire.
Tephrosia crepuscularia and *T. biundularia* [remarks based partly on specimens from Barnsley]. *Ent.*, Nov. 1886, xix. 269-272.
- RICHARD SOUTH. Yorkshire.
 President's Address. [Reviewing the Additions to the British fauna during the year; remarks: (p. 17) 'A *Gelechia* taken by Mr. Sang, amongst *Artemisia maritima* in salt-marshes near Redcar, in July, is described by Mr. Stainton, under the name of *G. tetragonella*']. *Proc. South Lond. Ent. and Nat. Hist. Soc.*, pp. 17-18.
- RICHARD SOUTH. Derbyshire, Lancashire or Cheshire.
 Observations on *Acherontia atropos* [with casual references to its occurring at Burton-on-Trent and Liverpool]. *Ent.*, June 1886, xix. 147-152.
- H. T. STANTON. Yorkshire.
 Description of a New *Gelechia* from our salt-marshes: *G. tetragonella* [taken by J. Sang amongst *Artemisia maritima* in salt-marshes near Redcar, in July; interesting local details by J. Sang given]. *Ent. Mo. Mag.*, Oct. 1885, xxii. 99.
- H. T. STANTON. Durham or Yorkshire.
 The Metallic Green Species of the genus *Coleophora* (Metallosetia of Stephens, Damophila of Curtis) [*C. melilotella* was first detected by John Scott in August 1859, at Stockton-on-Tees, where, in 1860, T. H. Allis also took a fine series]. *Ent. Mo. Mag.*, Oct. 1885, xxii. 97.
- H. T. STANTON. Derbyshire.
 Habits of *Hepialus velleda* [reprint of a note by M. Hill of Little Eaton, in *Ent. W. Int.*, July 2nd, 1859, vi. 107]. *Ent. Mo. Mag.*, March 1887, xxiii. 234.

- R. STANDEN. Lancashire.
Gulls Feeding on [Ghost] Moths [*Heptamelus humuli*: near Preston]. Nat. World, Oct. 1885, p. 198.
- C. E. STOTT. Lancashire.
Amphidasys betularia [the typical form still occurs in the Bolton district; one at light, June 14th, 1887]. Ent., Aug. 1887, xx. 211.
- CHAS. E. STOTT. Lancashire.
Sphinx Convolvuli [two near Bolton; one of them at Astley Bridge Church, Aug. 31st; the other near Horwich, Sept. 4th]. Ent., Oct. 1887, xx. 273.
- J. A. ERSKINE STUART. Yorkshire.
Early appearance of a Butterfly [A *Pieris* caught at Dewsbury on March 24th, 1886.] Nat. World, May 1886, p. 98.
- C. K. TERO. Lincolnshire.
Acronycta alni [near Grimsby, larva, Sept. 1884]. Ent., July 1885, xviii. 194.
- C. K. TERO. Lincolnshire.
Variety of *Melanippe montanata* [taken near Grimsby; description by Editor]. Ent., Nov. 1886, xix. 283.
- C. K. TERO [misprinted C. R. LOW]. Lincolnshire.
Sphinx Convolvuli [three; and *Acherontia atropos*, one; at Grimsby]. Ent., Nov. 1887, xx. 303; and erratum at p. 325.
- JNO. H. THOMPSON. Cumberland, Yorkshire.
Early Butterflies [*Vanessa urticae* near Penrith, Jno. H. Thompson; a 'Common White' in the Valley, Scarborough; no dates given]. Nat. Hist. Journ., Feb. 15th, 1885, p. 13.
- R. H. THOMPSON. Lancashire.
Amphidasys betularia [at Withington near Manchester, all black, with only a single example of the normal form]. Ent., Sept. 1887, xx. 232.
- CHAS. F. THORNEWILL. Notts.
Euphasia catena near Nottingham [seen by recorder in 1878, in the collection of an engine-driver, who had himself taken it in a lane near Nottingham]. Ent., June 1885, xviii. 167.
- CHAS. F. THORNEWILL. Derbyshire.
Lycæna argiolus in the Midlands [scarce round Repton]. Ent., March 1886, p. 63.
- CHAS. F. THORNEWILL. ? Derbyshire.
Lobophora viretata [near Burton-on-Trent, in three different woods; county not stated]. Ent., July 1886, p. 181.
- J. H. THRELFALL. Lancashire, Westmorland.
On the 'Lita' Group of the Gelechiidæ [with references to *Gelechia (Lita) semidecandrella*, sp. nov., from the coast sand-hills, near Preston; and *G. (L.) juncitella* at Witherslack]. Ent., March 1887, xx. 65 (also cf. Ent. Mo. Mag., March 1887, xxiii. 233).
- J. W. TOMLINSON. Notts.
Colias Edusa near Newark [several specimens, early in Sept. 1885]. Ent., Oct. 1885, xviii. 257.
- W. H. TUGWELL. Lancashire.
Notes on the Crambi from Deal [and on Preston examples of *Crambus contaminellus*; long note on their specific differentiation, with woodcut]. Ent., April 1886, xix. 75-78.
- [W. H. TUGWELL.] Lancashire.
[*Crambus contaminellus* Herr.-Sch. non Hüb., Lancashire: its specific determination.] Ent. Mo. Mag., April 1886, xxii. 268.

- [W. H.] TUGWELL. Durham.
 [Exhibition of a varied series of *Spilosoma menthastri* Esp. bred from Hartlepool eggs]. Ent., July 1886, xix. 190.
- J. W. TUTT. Lancashire.
Crambus contaminellus [from Lancashire and Sussex] in the Zeller Collection [long note on nomenclature and specific differentiation]. Ent., April 1886, pp. 73-75.
- J. W. TUTT. Yorkshire.
The *Tephrosia* discussion [with special reference to Harrison's Barnsley records of *T. biundularia*]. Ent., July 1886, p. 183.
- J. W. TUTT. Lancashire.
The *Crambus contaminellus* discussion; with description of *Crambus salinellus*, mihi [founded on the Preston specimens, amongst others]. Ent., March 1887, xx. 52-57.
- J. W. TUTT. Yorkshire, ? Durham.
Variation in *Scoparia ingrattella*; and remarks on *S. ambigualis* and *S. atomalis* [with references to *S. dubitalis* taken near Darlington, and to *S. ambigualis* from Yorkshire]. Ent. Mo. Mag., July 1887, xxiv. 42-43.
- J. W. TUTT. Yorkshire.
Acidalia promutata* and *Melanthia ocellata [the latter stated to be 'double brooded . . . certainly as far north as Yorkshire']. Ent. Mo. Mag., Nov. 1887, xxiv. 133.
- JAMES W. TUTT. Lancashire.
The *Lita* Group of *Gelechiidæ* [Messrs. Hodgkinson and Threlfall got specimens on the Lancashire coast, referred to *Lita juncitella*, but probably new]. Ent., Nov. 1887, xx. 293.
- HOWARD VAUGHAN. Isle of Man, Durham or Yorkshire.
[Variation of *Cidaria immanata*, *C. suffumata* and *C. russata*; specimens shown to Ent. Soc. Lond. from Isle of Man, and Darlington]. Trans. Ent. Soc. Lond., May 5th, 1886, p. xix.; also in Young Nat., June 1886, vii. 120; Ent. Mo. Mag., June 1886, xxiii. 24; and Ent., June 1886, xix. 167.
- HOWARD VAUGHAN. Yorkshire and ? Northumberland.
[Variation in *Gnophos obscurata* from various localities, including Yorkshire, Berwick-on-Tweed, etc.]. Trans. Ent. Soc. Lond., Dec. 1st, 1886, p. lvi.; Ent. Mo. Mag., Jan. 1887, xxiii. 191; Ent., Jan. 1887, xx. 20; and Young Nat., Jan. 1887, viii. 13.
- A. O. WALKER. Cheshire, Yorkshire.
Climatic Causes affecting the distribution of Lepidoptera in Great Britain [the result showing the diminution of species in a N. W. direction and pointing to a conclusion that moisture is against a rich lepidopterous fauna: the comparisons made are between Yorkshire and Cheshire]. Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 62-68.
- ALFRED O. WALKER. Cheshire.
Macrolepidoptera of the Chester District [An enumeration—with localities—of 37 butterflies, 18 sphinges, 56 bombyces, 184 noctuæ, 165 geometers, and 69 pyrales, 529 in all; some of them from the Welsh portion of the district only]. Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 69-85.
- LORD WALSHINGHAM. Yorkshire, Lancashire, Northumberland.
On some Probable Causes of a Tendency to Melanic Variation in Lepidoptera of high latitudes [details of experiments with Yorkshire *Tanagra chærophyllata* (p. 124), and refers (p. 133) to melanic forms of *Abraxas grossulariata* (Lancashire), *Polia chi* (Newcastle), and *Tephrosia crepuscularia* and *T. biundularia* (Barnsley)]. Trans. Yorks. Nat. Union, Part 8, [1885] Sheets D8 and D9, pp. 113-140.

W. WARREN.

Yorkshire.

'Note on *Dichrorampha tanacetii* [and its synonymy, in course of which the writer notes that he has bred *D. herbosana* in Yorkshire from roots of tansy and yarrow, among which plants he also caught them flying in numbers]. Ent. Mo. Mag., Jan. 1885, xxi. 190-1.

WILLIAM WARREN.

Lancashire or Furness.

Notes on the Species of Heinemann's Family *Chauliodidæ* that occur in England [*Aechmia profugella* Stn., abundant in Lancashire, where it has been bred by Threlfall and Murray from *Pimpinella saxifraga*]. Ent. Mo. Mag., Dec. 1887, xxiv. 147.

[C. O. WATERHOUSE.]

Yorkshire.

[*Sphinx convolvuli* taken in Yorkshire, brought to British Museum, and exhibited to Ent. Soc. Lond., Oct. 7th, 1885.] Proc. Ent. Soc. Lond., Oct. 7th, 1885, p. xxv.; Ent. Mo. Mag., Dec. 1885, xxii. 167.

A. H. WATERS.

'North of England.'

Winter Moths [*Cheimatobia boreata* said to be abundant in the North of England, but absent in Scotland]. Nat. World, Jan. 1886, p. 7.

[Mr. WELLMAN.]

? Derbyshire.

[*Agrotis cursoria* from Burton-on-Trent, exhibited to South Lond. Ent. Soc., Aug. 25th, 1887]. Young Nat., Oct. 1887, viii. 198.

[Mr. WELLMAN.]

? Derbyshire.

[*Lobophora viretata* Hb., from Burton-on-Trent, exhibited to South Lond. Ent. Soc., June 23rd, 1887.] Ent. Mo. Mag., Aug. 1887, xxiv. 71; Ent., Aug. 1887, xx. 215; and Young Nat., Aug. 1887, viii. 162.

[Mr. WELLMAN.]

? Derbyshire.

[Burton-on-Trent examples of *Agrotis cursoria* Bork., exhibited to South Lond. Ent. Soc., Aug. 25th, 1887.] Ent. Mo. Mag., Oct. 1887, xxiv. 119; Ent., Oct. 1887, xx. 287.

TUFFEN WEST.

Lancashire.

. . . Oak Egger Moth, *Lasiocampa Quercus* [mentioning that an entomologist carrying some females by train between Liverpool and Manchester, several males dashed against the windows of the carriage, etc.]. Journ. of Micr. and Nat. Sci., Jan. 1886, v. 45.

The Titles given above—264 in number—substantially represent the work accomplished by lepidopterists during the three years 1885, 1886, and 1887, with the exception of such few Titles as may have escaped the notice of the compilers of this Bibliography.

Titles of papers which have appeared in our own journal are not given here, to save space and repetition, more especially as the Index to *The Naturalist* is compiled with a special view to convenience of reference.

The broad features of the lepidopterous work of the three years may be summed up by a reference to the continued activity of the Lancashire, Cheshire, Derbyshire, Durham, and Yorkshire entomologists, and the publication for the two first-named counties of Dr. Ellis's and Mr. A. O. Walker's valuable county-lists; the equal activity of the Burton-on-Trent naturalists resulting also in a most

excellent list for their district, which—so far as we are concerned—includes much of Southern Derbyshire; and on the other hand to the almost total neglect of Nottinghamshire and Northumberland. We trust future years may see a revival of entomological activity in these counties, and more especially—if we may be permitted to say so—in the case of Nottinghamshire, for which we believe that a county catalogue of Lepidoptera is still a great desideratum.

BOOK NOTICES.

The Cat: its Natural History; Domestic Varieties; Management and Treatment (with Illustrations). By Philip M. Rule. With an essay on Feline Instinct, by Bernard Perez. London: Swan Sonnenschein, Lowrey & Co., 1887. 176 pages in small 8vo., with plates.

The title sufficiently explains the general scope of this little book, which—as the dedication to Mr. John Colam makes manifest—is devoted to the humanitarian and popular, and not to the scientific aspect of the subject.

Lectures delivered before the Sunday Lecture Society, Newcastle-on-Tyne. London: Walter Scott, 1887. Small 8vo.

This little volume includes seven lectures by some of our ablest men. They are as follows: The Natural History of Instinct, by G. J. Romanes, F.R.S.; Animal Life on the Ocean Surface, by Prof. H. N. Moseley, M.A., F.R.S.; The Eye and its Work, by Litton Forbes, M.D.; The Movements of Plants, by Ernest A. Parkyn, M.A.; The Relations between Natural Science and Literature, by Prof. H. Nettleship, M.A.; Facts and Fictions in Zoology, by Dr. Andrew Wilson, F.R.S.E.; and The Animals that make Limestone, by Dr. P. Herbert Carpenter, F.R.S.—each lecture being separately paged.

The Young Collector's Handbook of Ants, Bees, Dragonflies, Earwigs, Crickets, and Flies (Hymenoptera, Neuroptera, Orthoptera, Hemiptera, Diptera). By W. Harcourt Bath. London: Swan Sonnenschein & Co., 1888. Small 8vo., 108 pages, with numerous woodcuts.

The woodcuts in this little book are well calculated to give a preliminary idea of the leading types of the insects belonging to the groups specified, and—may we venture to hope—to excite an interest in them and a desire to know more about them than Mr. Bath's little volume (from its limited capacity as compared with the vast numerical extent of the orders on which it treats) can supply. Should even one earnest student of the future date his first impulse from this work, it will not have been published in vain.

NOTES ON AND ADDITIONS TO THE AVI-FAUNA OF UPPER TEESDALE.

J. BACKHOUSE, JUN., F.Z.S., M.B.O.U.

SINCE writing the article on this subject, which appeared in *The Naturalist* of October and November 1885, a few more species have been added to the list, and other strangers have also been reported but unfortunately not identified.

Last summer the writer spent a considerable amount of time in the Tees Valley, but, though constantly on the look-out for birds, comparatively little of interest was noted. The following diary extracts may, however, be of value, so are given for what they are worth.

June 4th.—Dipper's nest, with two perfectly fresh eggs, found at Cauldron Snout—the nest placed within reach of any heavy flood, such as are so frequently caused by severe thunderstorms.

June 6th.—Heard a Dipper singing beautifully *as it flew* past me; a pretty warbling kind of song.

June 24th.—A Peregrine Falcon seen by my father flying over from Yorkshire off Mickel Fell.

June 27th.—Whinchat heard producing a most peculiar note, just like the scream of a young hawk, though, of course, not so loud. When at length caught sight of, the bird was seated on the topmost spray of a small hazel-bush, and could be *seen* calling. It was evidently a note of alarm, but one quite new to me. Every now and then it made ordinary remarks, and then the call would be repeated. Nor was this the first time this call had been heard, for on two or three previous occasions, whilst passing by the same place, similar cries were noted, but were supposed to be those of a Sparrow Hawk at a distance.

June 29th.—Examined a Gannet which had strayed on to Cross Fell during the spring migration.

The stuffer also reported a Green Sandpiper killed by the 'Wheal' in August or September 1884, by Mr. Charlesworth, of Wakefield. As this occurrence was likewise reported by another reliable person, there can be little doubt as to its authenticity.

July 6th.—Was shown by Mr. Wearmouth an adult Pochard, which had been captured by his uncle in 1868, at California Dam.

Besides the three last-named birds, which are all new to the Teesdale list, I have examined (through the kindness of Mr. Wearmouth) a Common Scoter and a Great Grey Shrike, the property

of Mr. W. Lea, of Newbeggins. The former was killed in one of the large pools below Winch Bridge; and the latter, picked up defunct on Cronkley Scar (Yorkshire), was erroneously recorded in my previous paper as the Red-backed species.

In August 1886 a pair of Whimbrel passed close to us at Green Hurth Mine, a thick scotch mist prevailing at the time. They were evidently migrating, for nothing more was either seen or heard of them.

The Red-backed Shrike has again been seen by Mr. Wearmouth, (1887) haunting the old spot by the river-side, but he has searched in vain for its nest.

The Spotted Flycatcher has been wonderfully plentiful this last summer in the Tees Valley. Some dozen or so of nests came under my own notice, and others were reported to me.

Mr. C. Dowson, one of the oldest 'watchers' in the valley, informs me that the Dotterel used to arrive on Cross Fell in fine seasons at the end of April or the beginning of May. Dunlins, Common Sandpipers, and Curlews all appear, he says, in April usually.

In a letter from Mr. J. Cordeaux, dated from Barnard Castle, September 17th, 1887, after having spent some days at High Force, he writes:—"I am tolerably certain I *heard* the note of the Crossbill on the first morning I was there, but I never subsequently heard it or caught sight of the bird, although I frequently examined from our window and the road the tree tops with a glass. Crossbills were crossing Heligoland in some numbers in July' (see *The Naturalist*, 1885, p. 358).

In a subsequent letter Mr. Cordeaux also mentions having noticed a small party of Siskins on a mountain ash near the Force.

NOTE—ORNITHOLOGY.

Remarkable Flight of Birds on the Solway.—The following extract from my notes may be of service:—"Sunday, December 12th, 1886. Weather extremely cold, the thermometer lower than at any previous date during the year. Brisk gale from N.N.E.; atmosphere hazy with intermittent snow showers. At daybreak noticed a very remarkable flight of birds on the English shore of the Solway Firth at Flimby. The bulk of the flight, probably nine-tenths of the whole, consisted of Skylarks, the rest being made up of occasional troops of Starlings, Redwings, and Plovers, both green and golden. The birds, except the Golden Plovers, were flying quite low, barely clearing the roofs of the dwelling-houses. Their tails were turned towards the storm, and their line of flight was almost parallel with the beach. The flight was observed first about 8.30 a.m., and continued, with very slight intermission, until the commencement of divine service at 10.30. How much longer it lasted I cannot say definitely, but at midday only stragglers appeared. Taking the duration of the flight as extending over two and a half hours, and assuming that 100 birds crossed the observer's line of vision in every minute—a moderate estimate I am persuaded—we arrive at an aggregate of 15,000 birds passing during the morning."—W. HODGSON, A.L.S., Flimby, Maryport, Nov. 17th, 1887.

THE RUDSTONE.

REV. E. MAULE COLE, M.A.,

*Vicar of Wetwang; President of the Geological Section of the Yorkshire Naturalists' Union;
Author of 'Scandinavian Place Names,' etc.*

THE great monolith at Rudston near Bridlington, in the East Riding, is one of the most remarkable boulders in Yorkshire. Its dimensions are—length, from 45 ft. to 50 ft.; breadth, 5 ft. 10 in.; thickness, 2 ft. 3 in.; whilst the estimated weight is said to be 46 tons. It is a species of grit, finer grained than the Millstone Grit of the West Riding, and similar to the Grits of the Lower Oolite found on the watershed of the North Eastern moorlands. For many hundreds of years it has been standing erect on the brow of a low hill, beneath which meet, at a right angle, two dales, one extending southwards from the great Wold Valley, the other passing eastwards to Bridlington Bay. Half of it is buried in the ground, and it is self-evident that it was erected artificially. Rumour says that it formed one of three similar erect stones or menhirs, but there is not the slightest evidence of this, beyond the fact that a few small stones of similar grit may be detected in the walls of some buildings adjacent. The probability is, that when this large stone was stranded, smaller ones of a similar character, and from the same source, were stranded with it. The larger one was seized upon and erected by the primitive inhabitants as a memorial or monument of some departed hero; the lesser ones were left, to meet eventually with a less noble but perhaps more useful fate. If this be true, the stone is a *bloc perché*, in other words, an erratic, carried by ice, and stranded on an eminence similar to those found in the Jura.

The great glacier which crept along the East coast of Yorkshire, may not have extended so far inland as Rudston, but floating ice might easily have borne the boulder up the dale from Bridlington, and the projecting nab at the sharp turn of the valley would be just the place where we should expect it to get stranded. Its original home must be looked for at the Peak, or other portions of the Oolitic Cliffs, whence it was torn away, and gently carried to its present position. When once erected by human hands, it might have been a seat of worship, long before the present church was built close to it, and it seems to have given the name to the village, which subsequently clustered round the foot of the hill. The terminal 'stan' (Rodestan, as it occurs in Domesday) is clearly to be distinguished from the ordinary 'ton,' and the village should be Rudstone, not Rudston. (The spelling in Domesday, A.D. 1080-March 1888.

1086, is Rodestain, Rodestan, and Rodestein. In Kirkby's Inquest, A.D. 1277, it is Ruddestan, Rudestane, and Rudstane). Rudd was a common Icelandic personal name, and, under ordinary circumstances, Rudston would be perfectly correct to designate the enclosure (tun) of a man of that name; but the spelling in Domesday Book, as also in Kirkby's Inquest, clearly points to the word 'stan' or 'stone.' It may have been Rudd's Stone (Ruddestan). But here again the old spelling suggests an alternative, for it is 'Rodestan.' Hence some have imagined that 'rode' meant 'red,' though the stone is not red: others that it meant 'rood' as in rood-screen and rood-loft. The writer thinks that the first part of the word may mean 'famous' from 'hrod' Icelandic for fame or renown, and that the name was given by the Danes when they saw, and wondered at the great stone, already erected by earlier inhabitants.

On the wolds we find V-shaped hollow ways leading from one point to another, now for the most part filled up by the gradual accumulation of soil, and only showing a slight terrace on a dale side. These represent ancient British tracks. In the face of a chalk quarry, one hundred yards or less from the monolith, there is an appearance of such a hollow V-shaped way, 5 ft. in depth, from which the writer has obtained oyster-shells and bones of great age. The direction of this hollow is straight for the monolith, but till further excavations are made it is unwise to build any theory upon it. Meanwhile, the stone itself may well be brought before the notice of the Boulder Committee, as having, probably, more interest attached to it than any other boulder in the county.

NOTE—LEPIDOPTERA.

The Supposed Yorkshire *Nepticula tormentillæ*; and the occurrence of another Species New to the County.—Mr. Eustace R. Bankes informs me that the Yorkshire locality where he took the supposed larvæ of *Nepticula tormentillæ* (Nat. xii. pp. 12 and 59) in October last, is Ingleborough (Clapham); and that both in 1886 and 1887 he also found rather commonly round Ingleborough larvæ of *Lithocolletis sorbiella* Frey (= *aucupariella* Scott), and bred the perfect insect last spring. He also found the same species sparingly at Richmond, Yorkshire. It has not hitherto been recorded for the county. But it now seems clear (Ent. Mo. Mag., xxiv. 187) that the supposed *N. tormentillæ* from the Yorkshire and Westmorland moors is not that species at all, but an entirely new one, for which we still want a name.—GEO. T. PORRITT, Huddersfield, Feb. 13th, 1888.

NOTE—MAMMALIA.

Otter in Lincolnshire.—In *The Lincoln, Rutland, and Stamford Mercury* of 27th January, 1888, it is stated that a fine dog-otter (*Lutra vulgaris*) was found in Dunston Fen on Monday, the 23rd of January, on the farm of Mr. James Clifton. It was captured on the banks of the Carr-dyke and is now in the possession of Mr. J. Smith, chemist, Lincoln.—JAS. EARDLEY MASON, Alford, Feb. 6th, 1888.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT HATFIELD CHACE.

IN glorious weather the Yorkshire Naturalists' Union held their last excursion for 1887 on September 21st, at Hatfield. It was originally intended that the September meeting should take the form of a 'fungus foray,' but after the extraordinarily dry summer, and after consulting an eminent mycologist, it was anticipated that fungi would be unusually scarce objects this autumn, and the executive deemed it advisable at the last possible moment to once more postpone the fungus hunt for another year, and substitute for it an ordinary excursion. Hatfield, in the extreme south-west of the West Riding, was the spot selected, and the district marked out for investigation was that broad expanse of moorland, nine square miles in extent, known as Hatfield Chace. The choice was a happy one, for not only was the hunting-ground unlimited in extent, but practically the district hitherto had been unexplored. Shortly before nine o'clock the bulk of the naturalists alighted at Stainforth Station, and wended their way to the village of Hatfield, about one mile distant. Hatfield contains a fine church, and is a real type of a Yorkshire village. In due time the party arrived at the village, and caused no little consternation among the inhabitants, who gazed in curiosity at the visitors as they marched through with their vasculums, bags, hammers, and other paraphernalia. It was evident that something unusual was expected, for at the meeting-place—the Blue Bell—was suspended from the uppermost window an immense 'Union Jack,' a true indication that meant business. A small party intent upon botany, conchology, and ornithology, set out immediately, and hastily hurried along country roads and lanes to the 'Chace,' where collecting commenced in good earnest. The others, after being augmented, followed later, under the leadership of Mr. T. J. Hasselby, of Doncaster. A few under the guidance of Mr. J. M. Kirk, also of Doncaster, more leisurely made their way to some brick-ponds a short distance away, where they succeeded in fishing up some of the most magnificent microscopic objects of the lower orders of animal and plant life. After awhile two of the parties came in contact with each other near to Lindholme Hall, and, as they lunched, discussed what had been collected or observed. One had all but trod on a viper, and filled his box with fungi of various sizes and kinds. Another had got a number of rare plants and large caterpillars. Some had got nothing, and it was thought desirable that the southern portion of the Chace and the banks of the river Torne should be examined, from thence to return by way of the large drains to Hatfield. A party of four undertook this task. The remainder either visited

some so-called erratic boulders at Lindholme, or went two miles further to examine a warp pit—a large sheet of water covering about sixteen acres. The party of four struck due south across a vast purple-clad heath, now and again stopping to collect a rare plant, then deviating a little to the left to see something unusual that one of them had just detected in the insect way, or winding more to the left still to gather some bright-coloured fungi. After walking for about an hour and a half in this fashion, it began to be monotonous, and also swampy. What puzzled them was the south extremity of the moor seemed to be as far off as ever; they were evidently lost. Under the circumstances it was thought advisable to strike out for a village that lay to the right, which they did. A little further and on the edge of the moor, was observed a woman gathering blackberries, from whom was learned, to their astonishment, that the village was Wroot, in Lincolnshire, and several miles from Hatfield. A trap was sought up, and in a few minutes the party were driving at a rapid rate back to Yorkshire. They alighted in a good district, a mile or two over the border, and in a capital collecting ground. Several interesting objects were dredged up from the large drains, and no few plants of various kinds were collected from the adjoining cultivated fields. After all the misadventures of the party, however, they were amply compensated later on by some good finds. It was not long before the Union Jack was sighted at Hatfield, and it was soon found that all the dust-stained naturalists had assembled, and were ready for the excellent repast, which was duly served by the host. After tea sectional meetings were held, at which reports were drawn up of the work done during the day. The general meeting was held in the Parochial Meeting Room, within the vicarage grounds, kindly lent for the occasion by the Vicar, who had beautified the room by several cases of stuffed birds and animals captured in the district, and including two Polecats, Black Game (that, doubtless, had been naturalised in that district), and Stockdove. The chair was occupied by Dr. Erskine-Stuart, of Staincliffe. On calling the roll of Societies, it was found that the members present represented the following twelve Societies: Bradford (two Societies), Leeds (four), Heckmondwike, York, Dewsbury, Goole, Hull, and Doncaster. Mr. G. H. Caton Haigh, of Grainsby Hall, Lincolnshire, was duly elected a Member of the Union. A vote of thanks was accorded Mr. C. Wright, the Hon. Mrs. Meynell-Ingram, and Mr. A. I. Wells for allowing the members to visit their estates; to Messrs. Batty, Kirk, and Hasselby for acting as guides; and to the Vicar for the use of the Parochial Meeting Room. The Vicar, in responding to the vote, made some observations on his exhibits.

Mr. W. E. Clarke, F.L.S., in reporting for the Vertebrate Section, stated that 21 species of birds had been observed, including 14 residents, and seven summer visitors. Noteworthy amongst them was the Stonechat, a bird very locally distributed in Yorkshire, and the Hen Harrier, a dead specimen of which had been picked up on the moors.

Mr. W. D. Roebuck, F.L.S., in reporting for the Conchological Section, observed that 21 species of Mollusca had been collected, 18 of which were fresh-water species, including *Limnæa glabra* (abundant in one of the drains), *Sphærium lacustre*, *Valvata cristata*, etc., and three terrestrial species. The district was remarkably deficient in land species.

In the absence of the secretary of the Entomological Section, Mr. Roebuck also stated that a number of insects had been reported. The most interesting finds were larvæ of Emperor Moth, Fox Moth, *Eubolia cervinaria*, several moths, and a number of fine caterpillars of *Trichiosoma vitellinæ*.

For the Botanical Section, Mr. P. Fox Lee, phanerogamic secretary, the only officer of the section present, reported that the botanical members had had a rare field-day. At this late period of the year and especially after the prolonged hot summer, it could not be expected that very many of the phanerogams would be noticed in bloom, and there was little to add to the known flora of this part of South West Yorkshire. Compensating somewhat for the scarcity of plants in bloom, a sight long to be remembered was the profuse fruiting of the blackberries, the oak, the guelder rose, the dog rose (*Rosa lutetiana* Leman), and the hawthorn. On the heather-clad expanse of Hatfield Chace, a wild primeval bog, also on the banks of the dikes and drains, several of the typical peat-loving plants were observed. The best plant 'find' on the Chace was *Andromeda polifolia* L., a rare member of the *Ericaceæ*, with pink, waxy globose flowers. It was fairly abundant, scattered among the Ling and Cross-leaved Heath. A diligent search was made for the three British Sundews, all of which occur on the adjoining larger tract of Thorne Waste, but only one of them, *Drosera rotundifolia* L., was found. There were fine fruiting bushes of *Myrica gale* L. on the Chace, but not a trace of *Osmunda regalis* L., once said to grow here in thickets (quite likely places), could be made out. Besides these, on the Chace proper, the following species worthy of mention were seen far advanced in the 'sere and yellow leaf':—*Epilobium angustifolium* L., *Rhynchospora alba* Vahl., and *Eriophorum vaginatum* L. In the drains and on the peaty banks of ditches occurred *Stellaria aquatica* Scopoli, *Stellaria glauca* With. (H. Payne), *Hydrocotyle vulgaris* L., *Hippuris vulgaris* L., *Potamogeton pusillus* var.

tenuissima Koch., a barren *Myriophyllum*, and the Cyperus Sedge *Carex pseudocyperus* L. Four ardent members started on a bee-line (as they thought) across the undrained part of the Chace, from near Lindholme, intending to reach Hatfield in time, of course, for the meat tea. Unfortunately for them, in spite of compass and ordnance maps, they thoughtlessly persisted in steering south instead of west. One of them tumbled into a bog-hole, too, and had to shout to his companions for assistance. Perhaps it was mainly owing to their being so bent on finding the *Droseras*, or to their searching so carefully for rare fungi, that they forgot to take the bearings often enough on this flat stretch of marshy country. However, they eventually found themselves at Wroot in Lincolnshire, nearly nine miles from Hatfield! The order was now given by the conchologist who was in command, that nothing pertaining to natural history must be noted here, as Lincolnshire had no claims upon the Yorkshire Naturalists' Union. But the 'botanologists,' not to be scared by such peremptory orders, at once proceeded to a practical study of a certain foreign plant of the *Solanaceæ*, that species known so well by its fragrant aroma, viz., *Nicotiana tabacum*, specimens of which were not far to seek. This unofficial visit to Wroot was the means, after all, of getting botanical information both interesting and amusing. During the day there had been noticed in several places, and specimens gathered for winter use, the fairy-ring fungus, *Marasmius oreades*, called the Champignon. A meadow, bordering this Lincolnshire village, patterned over with 'rings' of the choice edible 'toad-stool' presented such an interesting sight that one would have been sorry to have missed it. The amusing part of the affair was this—a native, on being asked his opinion as to the occurrence of toad-stools in ring clusters in the meadow yonder, said, 'they grew that way where horses had rolled'! It is averred in some districts, that hedgehogs have something to do with the appearance of this fungoid growth, by 'running in circles,' and the fairies are believed to hold their revels within the circles on the night before full moon. Be this as it may, however, the 'Wroot' definition of the botanical matter in question was elucidated in a new fashion. In a little while a conveyance was obtained, and the explorers were driven with all despatch over the Yorkshire borders again, to within four miles of Hatfield. The conchologists at once commenced dredging in the drains for shells—although a shooting party who looked over the hedge said 'they were catching minnows'; and the botanologists to recording the growth of hedge-row, stubble-field and broad road-side, as if nothing out of the usual 'routine' had happened. The best of these observations were *Papaver dubium* L., *Spergularia rubra* Pers.,

Erodium cicutarium L'Hérit., *Rubus suberectus* (var. *fissus*?), *Dipsacus sylvestris* L., *Scleranthus annuus* L., and *Hordeum murinum* L., *Senecio sylvaticus* L. was very fine and abundant in the sandy lanes bordering the Chace. The total number of observations on marking the London Catalogue was found to be 142.

Mr. H. T. Soppitt supplemented the botanical report by stating that about thirty species of fungi were collected on or near the Chace, including *Ag. (Mycena) leptcephala* Pers., *Ag. (Psilocybe) ericæus* Pers., *Cort. (Telamonia) limonium* Fr., *Cort. (Dermocybe) cinnamomus* Fr., *Cort. (Hygrocybe) castaneus* Fr., *Lactarius subdulcis* Fr., *L. rufus* Fr., *L. glyciosmus* Fr., *Marasmius oreades* (abundant), *Calocera viscosa* Fr., *Phragmidium rubi* Pers., *P. violaceum* Schl., *Rhytisma andromedæ* Fr., and *Hypoxylon concentricum* Grev.

For the Geological Section Mr. S. A. Adamson, F.G.S., secretary, reported that the excursion presented a fine field for the microscopists and botanists (promoted now to the rank of botanologists!), but left, as was thought, comparatively little for the geologists to do. No welcome escarpment or delightful quarry welcomed the eyes of the hammermen, and long did their well-used tools hang idly by their sides. Still, the day was not without charm, and, indeed, profit also; an opportunity was presented of viewing a wide extent of primeval bog, and also of being informed how this was changed into fertile land. The party, under the guidance of Messrs. Rimes and Batty, set out in the direction of Lindholme, passing through the village of Hatfield Woodhouse on the way. In every direction could be seen long straight drains and dikes, the work of the old Dutch engineers, who, in the fens and bogs of this district, found ample scope for their special talents, and gave the locality a strong resemblance to their own Holland over the sea. The transformation of heath and morass into fertile and profitable land was explained to be by the process of 'warping;' that is, the tidal rivers are allowed to overflow the peat levels, until the fine silt held in suspension is deposited. The waters are then dammed out and the process repeated, when a thick deposit of fine impalpable mud is gradually laid down; this being worked into the land produces a rich and fertile soil. The sand and mud composing this warp originates from the wasting of the cliffs and shores of Holderness, and is brought down by the Humber. More silt is carried into the rivers by the tide than is brought down by them. Mr. Sollit stated some years ago that in a gallon of water taken from the Humber when it was agitated by the tide there were from 315 to 320 grains of this fine deposit, some of it so exceedingly fine that it did not settle to the bottom of a vessel after a space of ten hours. This silt was analysed, and a sample taken off Brough

consisted of moderately fine sand, 77 parts; alumina, 6; carbonate of lime, 6; carbonate of magnesia, 1; soluble salts, 2; oxide of iron, 2; and organic matter, 6. A local geologist (Dr. Arbuckle) stated that the usual sequence of the beds in the district of Hatfield Chace were—(1) the warp already alluded to; (2) peat, with the remains of an ancient forest at the base; (3) sand; (4) shiny laminated clay; and (5) gravel and sand. The Triassic Sandstones, capped with recent gravel, rise here and there as bosses. Near Lindholme the only section seen during the day was examined; this was a gravel-pit, the gravel resting upon a bed of sand, almost consolidated into stone, and having the name of 'pan sand.' The boulders and pebbles extracted from the gravel were of great variety, and very interesting from this reason. Specimens of sedimentary rocks, as magnesian limestone, carboniferous sandstones of various kinds, gannister and millstone grit; rocks of volcanic or igneous origin, as porphyry and basalt, and other rocks such as quartzite, vein quartz, black flints, and chert were obtained. There is little doubt that these gravels are re-arranged glacial deposits, washed from the waste of the till or boulder clay during some of the post-glacial submergences. It should be stated that two of the pieces of gannister found showed most plainly the well-known markings of stigmata. A short walk brought the party to the perfectly solitary mansion of Lindholme Hall; a visit to which was, perhaps, the chief object of the geological section. There are two celebrated boulders on the west front of the hall, and it was for their examination that the visit was made. By the courtesy of Mr. Wright, they were accurately measured by Mr. Brownridge, F.G.S., and other particulars obtained, in accordance with the schedule issued by the Yorkshire Boulder Committee. One boulder was undoubtedly of millstone grit, the other was more dubious, and a small chipping was kindly permitted from it for future determination and report. The name of the traditional William of Lindholme (about whom so many legends were related) is connected with these boulders, but, as usual, in a mythical manner. A long walk along dike-banks and grass-grown lanes had to be made before arrival at Hatfield.

For the Section of Micro-Zoology and Micro-Botany, the secretary, Mr. J. M. Kirk, of Doncaster, reported that the following forms had been met with:—ENTOMOSTRACA: *Daphnia pulex*, *Cyclops quadricornis*, *Diaptomus castor*, *Eurycerus lamellatus*, *Canthocamptus minutus*. INFUSORIA: *Loxodes bursaria*, *Lindia torulosa*, *Chaetonarus latus*, *Pterodina patina*, *Stentor mulleri*, *Paramecium aurelia*, *Actinophrys sol*, *Trachelocera viridis*, *Amphileptus fasciola*, *Coleps hirtus*, *Dileptus folium*, *Acomia vitrea*, *Urostyla grandis*, *Vorticella nebulifera*,

V. epistylis, *V. carchesium*. ROTATORIA: *Rotifer vulgare*, *Diglena lacustris*, *Hydatina senta*, *Lindia torulosa*, *Anuræa curvicornis*. HYDRA: *Hydra vulgaris*. DIATOMACEÆ: *Navicula cuspidata*, *Pleurosigma* (varieties), *Frustulia olivacea*, *Fragilaria capucina*, *Nitzschia sigmoidea*, *Cymatopleura solea*, *Cocconeis lanceolatum*, *Diatoma vulgare*, *Diadema confervacea*, *Gomphonema acuminatum*, *Pinnularia nobilis*. DESMIDIACEÆ: *Closterium acerosum*, *C. moniliferum*, *Cosmarium margaritiferum*. CONFEROID ALGA: *Volvox globator* (abundant).

The usual vote of thanks terminated the proceedings, after which most of the members betook themselves to the station for their respective destinations. A few remained, being desirous of learning more particulars of Hatfield eccentricities, and were successful in gaining much valuable information. On leaving the village some of the natives gave three ringing cheers for the naturalists. This terminated the last excursion for 1887, and it can truly be said that the meeting was both a successful and an enjoyable one, and will long be remembered.

ANOTHER YORKSHIRE LOCALITY FOR VERTIGO ANGUSTIOR.

CHARLES ASHFORD,

Christchurch, Hants; one of the Referees to the Conchological Society.

HAVING occasion a few days ago to look through my series of *V. pusilla*, taken by myself in Went Vale 1851-4, I detected among them a single example of *V. angustior*, which was at once submitted to Messrs. Taylor and Nelson. Its correct identification being beyond dispute, there remains only the question of evidence as to locality. These after-finds in the cabinet are rightly looked upon with some suspicion, and I should not have ventured to claim a formal record in this case had not the evidence in favour of Went Vale been unusually strong. For it happens that the shell in question is the only example of *V. angustior*, in a recent state, that has ever come into my hands; moreover, I have never taken *V. pusilla* elsewhere than in Went Vale nor received it from any correspondent at home or abroad, and all my examples of that species have occupied the same box for more than thirty years. These facts appear to me to preclude the possibility of error by misplacement. The locality recorded by Mr. Backhouse, viz., Milford, is about ten miles N.N.W. of Went Vale.

LAND AND FRESH-WATER MOLLUSCA OF UPPER AIREDALE, YORKSHIRE.

H. T. SOPPITT AND J. W. CARTER,
Ex-Presidents of the Bradford Naturalists' Society.

SOME years ago the Bradford Naturalists' Society mapped out a portion of the North-West Riding of Yorkshire for the purpose of investigating its fauna and flora. The district thus mapped out includes (1) the Yorkshire portion of the Lune drainage; (2) the Ribble drainage, Yorkshire portion; (3) the drainage of the Wharfe from its source to its junction with the Washburn below Otley; and (4) the drainage of the Aire from its source to the boundary of Leeds Borough. During the last few years the Aire-dale portion of the district has been most assiduously worked for mollusca, as the following list shows, and it would be interesting for comparison if conchologists investigating the more eastern portion of the valley would publish the results of their work in the pages of *The Naturalist*.

The river Aire has its source at Malham Tarn, a large sheet of water covering 153 acres, which is fed by a number of small streams having their origin on Fountains Fell and Hard Flask. The whole of the district down towards Skipton is of a Limestone character—Mountain Limestone and Yoredale; beyond, to the limit of our district it is chiefly Millstone Grit.

Owing to the comparative absence of stagnant ponds, dykes, etc., several common species, which might be expected to occur, are apparently absent, e.g., *Physa fontinalis*, *Valvata cristata*, etc.; and to the land species *Acme lineata* and *Achatina acicula* may possibly yet be added. The list is mainly the combined work of the following members of the Bradford Naturalists' Society—Messrs. J. Beanland, J. A. Hargreaves, M.C.S., F. Rhodes, M.C.S., W. West, F.L.S., and the writers; when otherwise the recorders' names are given. To Mr. Hargreaves we are specially indebted for valuable assistance rendered in the compilation of the list, and to Mr. James Ellison of Steeton for information concerning that portion of the district.

For the examination of critical forms our thanks are due to Messrs. John W. Taylor, Ex-President of the Conchological Society, W. Denison Roebuck, F.L.S., and George Roberts, M.C.S., of Lofthouse. Every species and variety mentioned in the list, without recorder's name being attached, has been verified by one of the three last-named gentlemen, or by ourselves. The arrangement followed is that of the Conchological Society's List of British Land and Fresh-water Mollusca, 1883.

MOLLUSCA AQUATILIA.

CONCHIFERA.

SPHÆRIIDÆ.

Sphærium corneum L. Abundant and generally distributed. Leeds and Liverpool Canal, Manningham, Saltaire, Bingley, Apperley and Calverley; ditch near Bingley; pond near Cottingley Bridge; Malham Tarn.

VAR. **flavescens** Macgill. Canal, Saltaire.

VAR. **nucleus** Stud. Common in Frizinghall Dam; canal, Calverley; not uncommon in Malham Tarn, 1883 (Roebuck and Butterell).

Sphærium rivicola Leach. In great abundance in Leeds and Liverpool Canal, but being chiefly an inhabitant of the mud at the bottom, is seldom obtained by dredging. Saltaire, Gilstead, Thackley, and near Apperley.

VAR. **compressa** Pasc. Apperley, 1887.

Sphærium lacustre Müll. Generally distributed and fairly common. Pond on Baildon Green; canal, Saltaire; ditch, Dowley Gap, near Bingley; pond at Bradford Moor; dam at Greengates; pond at Calverley; pond at Rilstone; Esholt (A. Hartley).

VAR. **brochoniana** Bourg. Ditch, Dowley Gap; pond, Bradford Moor.

VAR. **ryckholtii** Norm. Pond, Baildon Moor; Esholt (A. Hartley).

Pisidium amnicum Müll. Local, and by no means common. Canal, Saltaire; Bingley, Apperley, Malham Tarn.

Pisidium fontinale Drap. Common and generally distributed. Ponds, Bradford Moor; near Apperley, fine and plentiful; ditches, Calverley, Thackley, Tong Park, Hawksworth; Canal near Esholt; Airton and Malham, in bogs.

VAR. **henslowana** Shepp. Canal near Esholt; ditch, Thackley.

VAR. **pulchella** Jenyns. Pond, Bradford Moor.

VAR. **cinerea** Alder. Shipley Glen, Baildon Moor.

Pisidium pusillum Gmelin. Common and generally distributed. Pond, Bradford Moor; bog, Shipley Glen, numerous; Baildon Moor; ditch, Dowley Gap; Thackley; stream, Calverley; bog, Cullingworth; not uncommon in Malham Tarn, September 1883 (Roebuck and Butterell).

VAR. **obtusalis**. Bog, Shipley Glen.

Pisidium nitidum Jenyns. Bingley (J. Hebden, Trans. Y.N.U.).

1 MAY 1888

Naturalist,



THE NATURALISTS' MONTHLY:

A JOURNAL FOR NATURE-LOVERS AND NATURE-THINKERS,

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List of Hymenoptera occurring near Kirton-in-Lindsey.—C. F. GEORGE.

Notes on Botanical Nomenclature.—DR. G. B. DE TONI (Padua).

Evidences of Glacial Action near Ingleton.—ROBERT R. BALDERSTON.

An Entomological Expedition to North Wales and the Isle of Man.—GEO. T. PORRITT, F.L.S., F.E.S.

List of the Flora of Wensleydale.—JOHN PERCIVAL, B.A.

Coal-Dust and Explosions in Coal-Mines.—REV. ARTHUR WATTS, F.G.S.

The Ornithology of Skiddaw, Scawfell, and Helvellyn.—JOHN WATSON.

Bibliography of Entomology for 1885-7.

Bibliography of Geology and Palæontology for 1886

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UNIONIDÆ.

Unio tumidus Phil. By no means a common species. Dead shells in canal at Gilstead near Bingley, and at Thackley. Living examples, river Aire at Steeton (J. Ellison).

VAR. **radiata** Jeff. Canal near Silsden (J. Ellison).

VAR. **ponderosa** Pascal. River Aire, Steeton (J. Ellison).

VAR. **arcuata** Bouch. River Aire, Steeton (J. Ellison).

Unio pictorum L. Rare. One dead shell, canal near Bingley, 1886; one ditto from canal dredgings between Apperley and Calverley. Living examples from the Aire near Steeton (J. Ellison).

VAR. **deshayesii** Rossm. River Aire near Steeton (J. Ellison).

This variety—as we are informed by Mr. George Roberts—was recorded and described by Brown from the river Aire, Keighley, in 1845, as *Unio deshayesii*.

Anodonta cygnea L. Common in suitable localities. Rawson's Mill Dam, Bradford Moor, 1869 or 1870, several very fine specimens (Dr. Evans). Pond on Bradford Moor, 1882. Dead examples, canal dredgings, Saltaire and near Calverley. Canal near Steeton (J. Ellison).

VAR. **incrassata** Shepp. Canal dredgings between Apperley and Calverley, 1887.

VAR. **zellensis** Gmel. Canal dredgings between Apperley and Calverley, 1887. A form partaking of characters of two latter varieties from river Aire, Steeton (J. Ellison).

VAR. **rostrata** Rossm. In mud of pond near Garnett's Mill, Bradford, abundant, about one-fourth of them being remarkable in having a curious incurvature of the basal margins of both valves. Dredge heap, Apperley.

VAR. **stagnalis**. Dredge heap, Apperley

VAR. **avonensis** Mat. & Rack. non Mont. Several living examples, canal between Calverley and Apperley.

VAR. **intermedia** Brown non Lamarck. Greengates, near Apperley.

Anodonta anatina L. Frequent. Leeds and Liverpool Canal, Bingley and Calverley. Steeton (J. Ellison).

VAR. **radiata** Jeff. Canal dredgings near Calverley.

VAR. **complanata** Rossm. River Aire near Steeton (J. Ellison). Common in canal between Apperley and Calverley, 1887. Canal dredgings near Calverley.

VAR. **arelatensis** Jacq. Canal at Gilstead, 1886.

VAR. **normandi** Dupuy. Canal at Gilstead, 1886.

VAR. **cristata** Nelson. Very rare. Dredge heap between Apperley and Calverley.

VAR. **piscinalis** Nils. Canal dredgings near Calverley.

DREISSENIDÆ.

Dreissena polymorpha Pall. Extremely abundant in the Leeds and Liverpool Canal between Keighley and Calverley, very variable in form and size, finest at the bottom of the locks.

GASTEROPODA.

NERITIDÆ.

Neritina fluviatilis L. Local, and apparently confined to the canal; Saltaire, Gilstead, Bingley and Keighley.

VAR. **trifasciata** Colb. In same localities, and commoner than the type.

PALUDINIDÆ.

Paludina vivipara L. Local and rare. Pond, Bradford Moor, several, 1886-7. Canal, Gilstead, numerous, June 1886, on which date a portion of the canal was let off; several attempts have been made since to obtain it in the same locality, but without success. Ditch, Steeton (J. Ellison).

Bythinia tentaculata L. Extremely abundant; the commonest species of mollusc found in the canal; seldom found in any other habitat. Frizinghall Dam; pond, Thackley, rather large but much eroded; margin of Malham Tarn, 1887, numerous and fine although dead examples.

VAR. **ventricosa** Menke. Several places in the Leeds and Liverpool Canal.

VAR. **excavata** Jeff. Canal, Apperley.

VAR. **major** Locard. Canal, Bingley, Apperley, and Calverley.

VAR. **zonata** Baudon. Canal, Saltaire, Bingley, Calverley, and Apperley, not uncommon; pond, Thackley.

VAR. **fulva** Locard. Canal, Bingley to Apperley, common.

VAR. **cornea** Locard. Canal, Bingley to Calverley, but not common.

VAR. **angulata** Roberts. Rare. Canal, Saltaire and Apperley. The following is Mr. Roberts' description of this new variety:—
'Each whorl somewhat sharply angulated or shouldered above the periphery, giving the shell a turreted appearance; colour, reddish; length, 9-10 mill.' (Nat., 1887, p. 19).

MONST. **decollatum** Jeff. Frizinghall Dam, the most abundant form; canal, Manningham.

VALVATIDÆ.

Valvata piscinalis Müll. Generally distributed in the Leeds and Liverpool Canal; Bingley, not uncommon, Saltaire, and Thackley, occasionally. A few specimens at Malham Tarn approaching var. *acuminata*, 1883 (Roebuck and Butterell). Dead specimens in abundance on the margin of the Tarn, 1887.

VAR. **subcylindrica** Jeff. Canal, Bingley.

LIMNÆIDÆ.

Planorbis nitidus Müll. Extremely abundant in Frizinghall Dam, near Bradford. Occasional in canal, Saltaire, Apperley; and ditch, Dowley Gap, near Bingley.

Planorbis nautilus L. One specimen, Malham Tarn, 1883 (Roebuck and Butterell). Canal, Saltaire and Bingley (J. Wilcock, in Trans. Y. N. U.).

VAR. **crista** L. Abundant in mill-dam at Tong Park, 1887.

Planorbis albus Müll. Generally distributed and common. Frizinghall Dam; Beckfoot Lane; canal, Bingley to Calverley; pond, near Bingley; old river-bed, Keighley; mill-dam, Tong Park. Skipton (W. Nelson).

VAR. **draparnaldi** Shepp. Dam at Thackley; canal, Bingley.

Planorbis spirorbis Müll. Locally abundant. Ditches at Thackley; Dowley Gap, near Bingley; and Airton.

MONST. **scalaris**. A single specimen in a ditch at Dowley Gap, near Bingley, Jan. 22nd, 1887.

Planorbis vortex L. Common in canal near Bingley; rare, Saltaire; Calverley, 1872 (H. Shaw).

Planorbis carinatus Müll. Generally distributed and common. Abundant in pond on Baildon Green; pond at Tong Park; canal, Bingley to Calverley.

Planorbis complanatus L. Extremely rare. Canal, Calverley 1872 (H. Shaw). Not found since. Perhaps a case of mistaken identity.

Planorbis corneus L. Not a common species. Frizinghall Dam; pond on Baildon Green, introduced twenty years ago by Mr. T. Hey; pond at Fagley; ditch, Steeton (J. Ellison).

Planorbis contortus L. Abundant and generally distributed. Canal, Saltaire, Bingley; ditches, Dowley Gap, and near Cottingley Bridge; abundant, Malham Tarn.

Physa hypnorum L. Extremely local, having only been met with by Mr. W. E. Collinge, M.C.S., of Leeds, who informs us that he found it in profusion at Bell Busk.

Limnæa peregra Müll. Common everywhere.

VAR. **ovata** Drap. Common and fine in the canal at Manningham; Gilstead; Malham Tarn, 1883 (Roebuck and Butterell).

VAR. **labiosa** Jeff. Canal, Bingley.

VAR. **oblonga** Jeff. Canal, Thackley.

VAR. **minor** Colb. Dam at Greengates, near Apperley.

VAR. **ampullacea**. Canal, Thackley; pond, Esholt (A. Hartley).

VAR. **candida** Porro. Canal, Saltaire and Bingley.

Limnæa auricularia L. Generally distributed. Canal from Bingley to Apperley, very fine; ditch near Steeton (J. Ellison); river Aire, Bingley, and Seven Arches, Bingley.

Limnæa stagnalis L. Rare. Ponds, Fagley; canal dredgings, Apperley; ditch, Steeton (J. Ellison); Malham Tarn, 1887.

VAR. **fragilis-variegata** Roeb. Common on *Potamogeton lucens* in Malham Tarn, 1883 (Roebuck and Butterell).

Limnæa palustris Müll. Common and generally distributed. Frizinghall Dam; canal, Bingley to Calverley; ditches, Dowley Gap, near Bingley.

VAR. **elongata** Moq. Ditches, Dowley Gap.

VAR. **roseolabiata** Jeff. Ditches, Dowley Gap.

A keeled form near Bingley, 1887.

A form approaching var. *pellucida* Roff., Canal, near Saltaire.

VAR. **tincta** Jeff. Canal, Calverley.

Limnæa truncatula Müll. Generally distributed and commoner than the last. Canal from Bingley to Calverley; ditch, Thackley; bog, Shipley Glen; Seven Arches, near Bingley; Hawksworth; Rilstone; Draughton (W. D. Roebuck); Airton and Malham.

VAR. **minor** Moq. Shipley Glen; under logs of wood in wet places by the side of Malham Tarn, September 1883 (Roebuck and Butterell).

VAR. **ventricosa** Moq. Rare. Ditch, Thackley.

Limnæa glabra Müll. Rare and local. Pond at Baildon Green, 1882-3, not taken since.

Ancylus fluviatilis Müll. Common in canal, and in most streams in the district. Skipton (W. Nelson); Malham Tarn.

VAR. **albida** Jeff. River Aire at Malham Cove.

Ancylus lacustris L. Rare and local. Pond on Baildon Green; old river-bed, Keighley.

MOLLUSCA TERRESTRIA.

ARIONIDÆ.

Arion ater L. Abundant and generally distributed.

VAR. **brunnea** Roeb. Common. Shipley Glen; Hawksworth.

VAR. **rufa** L. Nab Wood.

VAR. **plumbea** Roeb. Shipley Glen.

Arion subfuscus Drap. Marshy field, Tong Park, 1887; Saltaire, 1887.

Arion hortensis Fèr. Common everywhere.

Arion bourguignati Mab. Often found in company with *A. hortensis*, and probably equally common (Mr. Roebuck tells us that it is probably generally much commoner, occurring in the open fields with *L. agrestis*, while *A. hortensis* prefers gardens).

LIMACIDÆ.

Limax maximus L. Generally distributed. Bradford, Manningham, Saltaire, Bingley, Steeton, Airton.

VAR. **cinerea** Moq. Charlestown.

Limax cinereo-niger Wolf. Rare and local. One, Shipley Glen, 1883.

VAR. **maura** Held. One, Shipley Glen, 1886.

Limax flavus L. Frequent in cellars, etc., Bradford.

Limax agrestis L. Abundant everywhere.

VAR. **sylvatica** Moq. non Drap. Abundant everywhere.

VAR. **nigrescens** Colb. Gardens near Peel Park, Bradford. Near Apperley.

Limax lævis Müll. Local. Bog, Shipley Glen; Fagley Wood, near Malham Tarn, September 1883 (Roebuck and Butterell).

Limax arborum B.-Ch. Not common. Calverley; Idle; Seven Arches, near Bingley; Cottingley; Gordale Scar, 1877 (W. Nelson); Airton near Malham.

HELICIDÆ.

Succinea putris L. Generally distributed and common in suitable situations. Canal-bank, Bingley to Apperley; Marley, very fine; Airton, near Malham; Gordale, 1,300 ft., two examples incrusting; Malham Tarn, 1883 (Roebuck and Butterell).

VAR. **albida**. An albino specimen found near Apperley, 1887 (A. Hartley).

Succinea elegans Risso. Probably often confounded with the last. One or two examples only of this species have been verified. Canal-side, Saltaire and Apperley.

Vitrina pellucida Müll. Common and generally distributed in suitable localities throughout the district. From Malham to Calverley.

Zonites cellarius Müll. Common in damp situations, often found in cellars in Bradford. Frizinghall, Saltaire, Bingley, Calverley, Malham.

VAR. **albinos** Moq. Saltaire; Heaton; Seven Arches, near Bingley; Thackley.

Zonites alliarius Miller. Common and generally distributed throughout the district.

Zonites glaber Stud. Locally common. Saltaire; Seven Arches, near Bingley; Cottingley; Thackley.

Zonites nitidulus Drap. Common throughout the district.

VAR. **nitens** Mich. Shipley Glen, Nab Wood.

Zonites purus Alder. Local and somewhat rare. Near Skipton, 1881; Gordale, 1883; Buck Wood, Thackley, 1887.

VAR. **margaritacea** Jeff. Commoner than the type. Harden near Bingley, 1875 (W. Nelson); Buck Wood, Thackley, 1886; Nab Wood, Saltaire, 1886; Calverley Wood, 1887.

Zonites radiatulus Alder. Very local. Shipley Glen, 1883, still occurs in the same locality; Cullingworth, 1883.

VAR. **viridescenti-alba** Jeff. Rare. Shipley Glen, 1881 (W. Nelson).

Zonites nitidus Müll. Local. One example, canal-side, Saltaire, 1886; one in Nab Wood, Saltaire, 1887. Extremely abundant amongst *Glyceria aquatica*, canal-side, Thackley to Calverley (1887).

Zonites excavatus Bean. Local, but in some places abundant. Saltaire, 1886; Fagley Wood, common; Nab Wood; Shipley Glen; Calverley Woods, 1887.

Zonites crystallinus Müll. Generally distributed in suitable localities throughout the district.

Zonites fulvus Müll. Generally distributed, but chiefly found in woods. Saltaire, 1880; Heaton Wood, 1882; common in marshy ground at Shipley Glen, first found in 1882 (W. Nelson); Seven Arches, near Bingley, 1886-7; Beckfoot Lane, near Bingley; Fagley Wood; Nab Wood, Saltaire; Malham, 1887.

Helix lamellata Jeff. Rare and local. Shipley Glen, several examples, 1887. One, 1888.

Helix aculeata Müll. Very local. Harden near Bingley, 1875 (W. Nelson); Shipley Glen, three examples, 1887; Seven Arches near Bingley, common, 1887.

Helix aspersa Müll. Very rare off limestone. Beckfoot Lane, Bingley, one, dead, 1881; Steeton, several (J. Ellison); not uncommon in gardens at Airton, near Malham, 1887.

Helix nemoralis L. Generally distributed, but most abundant on limestone.

VAR. **roseolabiata** Tayl. Several specimens near Calverley, agreeing in colour with var. *petiveria* Moq., with the five bands of the type present.

VAR. **albolabiata** Von Mart. Railway embankment near Idle, with the colour of var. *libellula* Risso, and the band-formula 00100.

VAR. **libellula** Risso. Frequent, and variously banded. Apperley, Bingley, Malham, Calverley, Hawksworth.

VAR. **rubella** Moq. Malham, Apperley, Nab Wood, Saltaire, Calverley, etc.—with and without bands.

VAR. **petiveria** Moq. Frequent, the banded form most common. Gilstead, Apperley, Calverley; canal-bank, Idle; etc.

VAR. **castanea** Moq. Rare. Several examples near Apperley.

Helix hortensis Müll. Like the last, this species is most abundant on a limestone soil. Its occurrence off limestone in numbers and variety is chiefly on railway embankments. Several named varieties occur with the type.

VAR. **minor** Moq. Near Apperley.

VAR. **lutea** Moq. A common form. Bingley, Apperley, Malham.

VAR. **olivacea** Tayl. Confined to the railway embankment near Apperley, where it was first found by Mr. A. Hartley, to whom we are indebted for a fine series of specimens.

Helix arbustorum L. Most abundant on limestone, and doubtfully indigenous on the millstone grit, its occurrence in numbers being in the vicinity of lime-kilns. Gordale Scar, 1877 (W. Nelson); Malham, 1882; Airton; Gargrave (J. Whitwam); Bell Busk (W. Nelson); Rilstone, 1887; one dead specimen amongst rejectamenta of river Aire at Cottingley; one, Seven Arches, near Bingley; common and increasing in numbers at Apperley, in proximity to a lime-kiln.

VAR. **alpestris** Ziegl. Airton near Malham, 1883.

VAR. **marmorata** Tayl. Airton, common, 1882; Rilstone; Apperley, frequent, 1887.

VAR. **cincta** Tayl. Malham, 1882; Bell Busk (J. W. Taylor); Gordale, one, 1882 (W. D. Roebuck); Airton, 1883; Rilstone, 1886.

VAR. **flavescens** Moq. Malham, 1882; Airton (W. Nelson); Gargrave (J. Whitwam); Rilstone, 1886.

VAR. **albinos** Moq. Gargrave, 1882 (J. Whitwam).

Helix rufescens Penn. Probably the most abundant land-shell in the district. More or less scalariform examples are not uncommon.

VAR. **minor** Jeff. Two examples, Malham, 1887.

VAR. **rubens** Moq. Common with the type.

VAR. **alba** Moq. Common.

VAR. **depressa** Loc. A flat form occurring commonly at Greengates, also at Saltaire and near Bingley.

Helix concinna Jeff. Rare. Saltaire.

VAR. **albida** Jeff. Buck Wood, Thackley.

Helix hispida L. Locally common. Malham, common, 1882; Gordale, 1882; Airton, one (W. D. Roebuck); Bingley, 1882; Idle; Saltaire, 1886; occasionally near Bingley; Frizinghall, common, 1887.

VAR. **subrufa** Moq. Malham, 1883 (Roebuck and Butterell).

VAR. **depilata** Ald. Bingley; near Esholt; near Calverley.

VAR. **albida** Jeff. Buck Wood, Thackley.

Helix sericea Müll. Common, and in some places abundant. Banks of canal from Bingley to Calverley in profusion; Malham, September 1883 (W. D. Roebuck); Gennet's Cave, 1887; Skipton (R. C. Middleton, M.A.).

Helix fusca Mont. Rare and local. Several examples from a bog in Shipley Glen, 1887.

Helix virgata DaCosta. Very local. Common in a pasture at Morton Banks, near Bingley, June 1884; in great profusion in a short hilly pasture at Cottingley, near Bingley, since 1882; a variety approaching *lutescens* abundant with the type.

Helix caperata Mont. Common and generally distributed. Under dead leaves, Bingley, 1882 (J. A. and E. P. P. Butterfield); cross-roads near Ingrow; Gilstead, Heaton, Saltaire, Fagley, Apperley, Calverley.

Helix ericetorum Müll. Local and confined to the limestone district. Malham, 1873 (J. W. Taylor), 1877 (W. Nelson); Airton (W. Nelson); upper end of Gordale Scar, 1887.

Helix rotundata Müll. Abundant throughout the district.

VAR. **turtoni** Flem. Calverley, 1886.

VAR. **alba** Moq. Fagley woods, 1887.

Helix rupestris Drap. Abundant, but confined to the limestone.

Kirby Malham, 1877 (W. Nelson); Cracoe, 1881 (T. W. Bell); Malham, 1882 and 1887; Airton, 1882 (W. D. Roebuck); near Gargrave, 1883; Skipton, 1883.

Helix pygmæa Drap. Not uncommon in a few localities.

Chellow Dean, near Bradford, 1883; amongst dead leaves, Shipley Glen, 1887; Fagley Wood, 1887.

Helix pulchella Müll. Not common. Apperley Bridge 1878 (W. Nelson); Calverley, dead examples, 1882 (W. Nelson).

VAR. **costata** Müll. Commoner than the type. Canal bank between Apperley and Calverley; Idle; Saltaire; Seven Arches, near Bingley, all in 1887.

Helix lapicida L. Confined to the limestone, where it is not uncommon. Near Gordale Scar, 1877 (W. Nelson); Malham, 1882; Airton, 1884; Kirby Malham, 1887; Rilstone, 1886.

VAR. **nigrescens** Taylor. Malham, 1883.

Bulimus obscurus Müll. Generally distributed, and in some places common. Gordale, at 1,000 ft., 1883; Airton, 1883; Bingley, Dowley Gap, Nab Wood, Saltaire, Idle, Thackley, Apperley.

Pupa secale Drap. Apparently rare, but abundant about Settle, in Ribblesdale, only a few miles outside our area, and on the same formation as the upper portion of Airedale. Malham, 1871 (H. Shaw).

Pupa ringens Jeff. Very local and not uncommon. Boggy ground, upper end of Shipley Glen, 1882 (W. Nelson). Taken every year since.

VAR. **pallida** Jeff. Occurs with the type.

Pupa umbilicata Drap. Abundant on limestone, but local on the millstone grit. Kirby Malham, 1877 (W. Nelson); Malham, 1882; Gordale, 1887; near Skipton, 1877 (R. Scharff); Harden near Bingley, 1875 (W. Nelson); Buck Wood, Thackley, 1886; Esholt, common, 1887 (A. Hartley); near Keighley; Idle, 1887.

VAR. **curta** Westerl. Between Bingley and Harden.

Pupa marginata Drap. Rare. Limestone rocks, Malham, 1882.

Vertigo antivertigo Drap. Very local. Bog in Shipley Glen, 1882 (W. Nelson), and found commonly up to the present time in the same locality.

Vertigo pygmæa Drap. Very rare. Two examples, Malham, 1882.

Vertigo alpestris Alder. Very local. Confined to a garden wall near Bingley, 1887. Not previously recorded for Yorkshire.

Vertigo substriata Jeff. Very local, having only been found at Shipley Glen in boggy ground, associated with *Vertigo anti-vertigo*, *Pupa ringens*, etc., 1887.

Vertigo pusilla Müll. Very rare. Two amongst moss, Malham, 1882.

Vertigo edentula Drap. Very local and somewhat rare. Marshy ground, Shipley Glen, several, 1887.

Balea perversa L. Common on the limestone. Malham, 1882; Gennet's Cave, 1882 (W. D. Roebuck); Kirkby Malham, 1887.

Clausilia rugosa Drap. Common and generally distributed. Abundant on limestone rocks, Malham; on silurian rocks, Malham Moor, 1883 (Roebuck and Butterell); Airton to Gargrave, 1883; near Skipton (R. Scharff); Bingley, Gilstead, Apperley, Idle, Calverley.

VAR. **dubia** Drap. Up to the present time has only been found on limestone. Malham, 1882; Gordale and Airton, 1887.

Clausilia laminata Mont. Very rare. Rocks near Skipton, 1882 (W. Whitwell).

Cochlicopa tridens Pult. Generally distributed. Beckfoot Lane, near Bingley, 1882 (E. P. P. Butterfield); bog, near Ingrow; Buck Wood, Thackley; Red Beck, Heaton, near Saltaire.

Cochlicopa lubrica Müll. Common and generally distributed throughout the district, from the source of the Aire to the Leeds borough boundary.

VAR. **lubricoides** Fér. Malham, 1882; Saltaire, 1887.

Carychium minimum Müll. Common in suitable localities throughout the district. Gargrave, Bingley, Shipley Glen, Frizinghall, Idle, Nab Wood, Saltaire, Calverley.

The total number of species enumerated in the list is 93.

NOTE—CRYPTOGAMIA.

Polystichum angulare in North Lincolnshire.—This fern, new to North Lincoln, has been found by Miss Susan Allett, of Tothill, in a hedgerow in the parish of Withern. Dr. F. Arnold Lees identified the specimen, a frond of which was sent him through me.—JAS. EARDLEY MASON, Alford, Feb. 6th, 1888.

Naturalist,

AN ENTOMOLOGICAL EXPEDITION TO NORTH WALES AND THE ISLE OF MAN.

GEORGE T. PORRITT, F.L.S., F.E.S.,
Huddersfield; Author of the 'List of Yorkshire Lepidoptera.'

IN August last, in company with Mr. G. W. K. Crosland, of this town, I made an entomological excursion to North Wales, making Penmaenmawr head-quarters. We arrived there on the evening of August 4th, and most of our collecting was done in the immediate vicinity of that charming little place, and on the sandhills lying between it and Conway and Llandudno. On several of the earlier evenings we climbed up the Moel Leys Mountain, on the possibility of finding one or two late specimens of *Agrotis ashworthii* still on the wing, but, as we feared, it was evidently over, for no trace of it was to be found, though some years previously, in July, I had discovered it was a not uncommon species there. And we were, of course, quite too late for the local *Acidalia contiguaria*, which occurs on the same mountain, as well as probably on all the rocks from Conway to Llanfairfechan. On the Moel Leys, but not high up, we were glad to find *Stilbia anomala* was fairly common, and in fine condition, evidently just getting well out; and we were also very pleased to find that *Cidaria picata* still occurred in its old habitat near Conway. The pretty *Larentia olivata* occurred not uncommonly on rocks, whilst the most abundant Noctua was the lively *Tryphæna janthina*. This species seemed to occur everywhere; on beating a holly-bush six or eight specimens would sometimes fly out; and in gardens and lanes it appeared to be quite as abundant as its bigger narrow-bordered brother *T. pronuba* is in Yorkshire.

We collected such species of the orders Lepidoptera, Neuroptera (omitting *Psocidæ* and *Ephemeridæ*), Trichoptera, and Orthoptera as came in our way, but the district did not appear rich in species, as the appended lists will show. Only in the Lepidoptera, however, had we had much previous experience, or there is little doubt the list would have been largely augmented, the character of the ground being evidently very favourable for the other orders.

For a change in the collecting, on the 15th we crossed over to the Isle of Man, returning to Penmaenmawr on the 20th. On the island we hoped to have got *Polia nigrocincta*, but were disappointed; and as I had also searched for the larvæ two months earlier, in June, on the ground where some years ago Mr. Roxburgh, of Liverpool, and I found nearly forty larvæ one evening, we began to

fear that *nigrocincta* was becoming scarce. After our return home we suggested this to a Liverpool lepidopterist, who has had great experience with the species, and were then at once informed by him that as three collectors had spent about a fortnight on the very ground, just before our going there in June, working every available yard of it for this species, and so taking plenty, our informant's surprise would have been great if we had found any! In the middle of August, too, we were probably a fortnight too early for the variety *unicolor* of *Cirrædia xerampelina*, which used to be not uncommon in the Nunnery Grounds near Douglas, and doubtless equally so in other parts of the island, as its food (the ash) flourishes luxuriantly, and is undoubtedly *the tree* of the Isle of Man. In the list of species for the Isle of Man, I have also included those I took when there from the 17th to 20th June during the past season, as well as several Trichoptera I took several years ago.

PENMAENMAWR. AND DISTRICT.

LEPIDOPTERA.

Vanessa io, *Satyrus ægeria*, and about a dozen other species of butterflies occurred, but none of any rarity. *Satyrus semele* seemed equally at home either on mountains or sandhills, and was common. *Hepialus sylvinus*; *Gnophos obscurata*; *Larentia olivata*; *Eupithæcia linariata*, larvæ in seed capsules of *Linaria vulgaris*; *E. minutata*; *E. subfulvata*; *E. pumilata*; *E. nanata*; *Coremia unidentaria*, abundant everywhere; *Scotosia dubitata*, on ling flowers after dark, high upon the Moel Leys; *Cidaria picata*, about rocks between Penmaenmawr and Conway; *C. prunata*, abundant about old currant or gooseberry bushes in gardens; *Pygæra bucephala*, larvæ in profusion on sallows; *Charæas graminis*, very fine on the Moel Leys; *Miana literosa*; *Agrotis porphyrea*; *Tryphæna janthina*, abundant everywhere, apparently much more so than *T. pronuba*; *Noctua umbrosa*; *Xanthia cerago*; *Anarta myrtilli*, larvæ; *Mania maura*; *Stilbia anomala*, common on, but near the base of, the Moel Leys; *Pyrausta purpuralis*; *Endotricha flammealis*; *Scoparia mercurialis*; *S. truncicollis*, a *Scoparia* occurred rather commonly in one hedge at Penmaenmawr, which seems to be a pale form of this species; *Crambus geniculellus*; *Peronea sponsana*; *Tortrix unifasciana*; *Dictyopteryx holmiana*; *Grapholitha nisana*; *Spilonota incarnatana*, this pretty species occurred in profusion among *Rosa spinosissima* in Conway Bay, and on the opposite sandhills near Llandudno; *Phoxopteryx lundana*, common; *Xanthosetia hamana*; *Conchylis inopiana*; *Aphelia pratana*, abundant; *Hypolepia radiatella*, most abundant, and almost as variable as plentiful; *Phibalocera quercella*; *Depressaria costosella*;

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D. umbellella and *D. nanatella*, common; *D. nervosella*; *Gelechia tricolorella*; *Pterophorus gonodactylus*, second brood; *P. lithodactylus*, in profusion among *Inula dysenterica* on the sandhills near Llandudno; *P. monodactylus*, equally abundant as larvæ and pupæ among convolvulus, at Penmaenmawr.

NEUROPTERA.

Most of the Neuroptera and Trichoptera were taken by beating the bushes and trees overhanging a wild mountain stream leading up to the Fairy Glen, near Penmaenmawr. *Æschna juncea*; *Chloroperla grammatica*; *Leuctra fusciventris*, abundant; *Nemoura meyeri*; *Hemerobius subnebulosus*; *Chrysopa flava*; *C. flavifrons*, beaten out of ash trees, apparently the commonest *Chrysopa* then out.

TRICHOPTERA.

Limnophilus sparsus; *Silo pallipes*; *Crunæcia irrorata*; *Lepidostoma hirta*; *Odontocerum albicorne*, plentiful; *Hydropsyche instabilis*; *Philopotamus montanus*, perhaps the most abundant species; *Wormaldia occipitalis*; *Plectrocnemia geniculata*, one specimen; *Polycentropus flavomaculatus* and *P. multiguttatus*; *Rhyacophila dorsalis*, abundant.

ORTHOPTERA.

Forficula auricularia; *Stenobothris viridulus*; *S. rufipes*; *S. elegans*; *S. parallellus*; *S. bicolor*, in great profusion everywhere, both on mountains and sandhills; *Gomphocerus maculatus* (*biguttatus*) equally abundant, and everywhere in company with *S. bicolor*; *Odontura punctatissima*, several of this beautiful and singular species on low plants, or beaten out of bushes.

THE ISLE OF MAN.

LEPIDOPTERA.

Vanessa atalanta, Castletown; *Satyrus megæra*, in abundance everywhere, and very brightly coloured; *S. semele*, on the rocks; *Sesia philanthiformis*, about *Statice armeria* on the rocks between Derby Castle and Onchan Harbour, in June; *Bombyx rubi*, in larval stage at Port Soderick; *Epione apiciaria*; *Boarmia repandata*; *Crocallis elinguaris*, abundant; *Gnophos obscurata*, very fine in Onchan Harbour; *Larentia salicata*, common in a lane near Onchan; *Eupithecia venosata*, abundant among *Silene inflata*, in June; *E. constrictata*, Onchan Harbour in June; *E. pumilata*, common in ash trees; *Melanthia rubiginata*, common; *M. ocellata*, second brood; *Coremia propugnata*; *C. unidentaria*; *Cidaria russata*, common, and almost black; *C. immanata*, in the greatest profusion in ash trees, on tapping the trees along a stream at Port Soderick, they flew off in

great numbers, and in splendid variety, both in pale and dark forms; *C. testata*, abundant; *Hypsipetes elutata*, common, but the forms very ordinary; *Notodonta siczac*, in larval stage at Port Soderick; *Hydræcia micacea*; *Miana literosa*; *Tryphæna orbona*, the reddish form with spotted tip, sometimes mistaken by beginners for *T. subsequa*, was not uncommon; *Dianthæcia capsophila*, common in June, a few larvæ in August; *D. cucubali*, Onchan Harbour; *D. casia*, abundant in June in Onchan Harbour, was taken even more freely than *capsophila*; a few larvæ in August at same place, and also at Port Soderick, but we were evidently too late for the larvæ which had doubtless gone down early this unusually hot summer; *Hadena pisi*; *Abrostola urtica*; *Gonoptera libatrix*; *Crambus geniculellus*; *Homæosoma nimbella*, larvæ plentiful in camomile flowers on the rocks beyond Derby Castle; *Phycis carbonariella*, Scarlett Rocks, Castletown; *Teras caudana* and *T. contaminana*; *Sciaphila colquhounana*, on the rocks between Derby Castle and Onchan Harbour; *Bactra lanceolana*; *Pedisca semifuscana*, small hill form; *Conchylis stramineana*, common; *Depressaria arenella*, *D. subpropinquella*, *D. alstræmeriella*, *D. applanella*, and *D. heraceliella*; *Gelechia cinerella*; *Glyphipteryx thrasonella*, abundant at Port Soderick; *Coleophora albicostella*; *Pterophorus microdactylus*, about *Eupatorium cannabinum* in June.

NEUROPTERA.

Isopteryx burmeisteri, common by sweeping the herbage on the sides of streams; *Leuctra fusciventris*, in similar situations; *Hemerobius micans* and *H. humuli*; *H. subnebulosus*, abundant; *H. nervosus*, not uncommon near Douglas and Port Soderick.

TRICHOPTERA.

Limnophilus centralis; *L. auricula* [taken commonly in a previous year]; *L. sparsus*; *Sericostoma personatum*, Port Soderick; *Lepidostoma hirta* [taken in a previous year]; *Beræa pullata*, abundant by sweeping the long grass in a damp meadow at Port Soderick in June; *Odontocerum albicorne*, Port Soderick; *Hydropsyche instabilis*, plentiful; *Philopotamus montanus*, very abundant, flying in the sunshine over rapid streams; *Wormaldia subnigra*, common, Port Soderick; *Plectrocnemia conspersa*, common near Douglas; *P. geniculata*, two nice specimens by beating herbage overhanging the stream in a wood behind Douglas; *Polycentropus flavomaculatus*, on the stream at Port Soderick; *Tinodes assimilis*, this local species occurred in scores on dripping rocks at Port Soderick in June, and a few stragglers were still about in August; *Rhyacophila dorsalis*, abundant; *Agapetus fuscipes* [taken in a previous year].

ORTHOPTERA.

Stenobothris viridulus and *S. bicolor*, abundant; and of course *Forficula auricularia*.

DIPTERA.

Three species of *Tipulidæ* taken near Douglas in June have been kindly named for me by Dr. R. H. Meade, of Bradford, as *Amapolis littoralis*, *Pedicia rivosa*, and *Ptychoptera contaminata*.

ACULEATE HYMENOPTERA IN NORTH LINCOLNSHIRE.

C. F. GEORGE, M.R.C.S.,

Kirton-in-Lindsey; Ex-President of the Postal Microscopical Society.

THE following is a list of Aculeate Hymenoptera which I have myself taken at Kirton-in-Lindsey and neighbourhood:—

FOSSORES.

Pompilus viaticus.
Priocnemis fuscus.
Ammophila sabulosa.
Diodontus luperus.
Pemphredon lugubris.
Mellinus arvensis.
Crabro clavipes.
Crabro vagabundus.
Crabro cephalotes.
Crabro cribrarius.
Crabro peltarius.

DIPLOPTERA.

Vespa vulgaris.
Vespa germanica.
Vespa rufa.
Vespa sylvestris.
Odynerus antilope.

ANTHOPHILA.

Colletes succincta.
Sphecodes gibbus.
Sphecodes pillifrons.
Sphecodes dimidiatus?
Halictus rubicundus.
Halictus quadrinotatus.
Halictus cylindricus.
Halictus punctatissimus.
Halictus morio.
Andrena albicans.
Andrena trimmerana.
Andrena nitida.
Andrena fulva.
Andrena clarkella.

Andrena nigroænea.
Andrena gwynana.
Andrena præcox.
Andrena chrysosceles.
Andrena minutula.
Nomada lineola.
Nomada alternata.
Nomada ruficornis.
Epeolus variegatus.
Melecta luctuosa.
Cælioxys elongata.
Megachile willughbiella.
Megachile centuncularis.
Osmia rufa.
Anthophora pilipes.
Apathus rupestris.
Apathus vestalis.
Bombus cognatus.
Bombus muscorum.
Bombus distinguendus.
Bombus hortorum.
Bombus subterraneus.
Bombus lapidarius.
Bombus terrestris.
Bombus virginalis.
Apis mellifica.

I may add that of other groups *Sirex juvencus* has occurred, a living specimen having been caught in this place since the above list was made out.

SOME RECENT BIRD-BOOKS.

WM. EAGLE CLARKE, F.L.S.

- 1.—**A Manual of North American Birds.** By ROBERT RIDGWAY. Illustrated by 464 outline drawings of the generic characters. Philadelphia: J. B. Lippincott Company. 1888.
- 2.—**The Birds of Wiltshire**, comprising all the Periodical and Occasional Visitants, as well as those which are indigenous to the County. By the Rev. ALFRED CHARLES SMITH, M.A., Christ Church, Oxford; Rector of Yatesbury; Member of the British Ornithologists' Union; Hon. Sec. of the Wiltshire Archæological and Natural History Society. Published for the Author by R. H. Porter, 6, Tenterden Street, London, W.; and H. F. Bull, Devizes. 1887.
- 3.—**Some more illustrations of Wild Birds, showing their natural habits.** By C. M. ADAMSON. London: Gurney & Jackson. Newcastle-upon-Tyne: Mawson, Swan, & Morgan. 1887.

MR. RIDGWAY'S MANUAL is another reminder of the excellence of the work accomplished by North American ornithologists; indeed, it is perhaps not too much to aver that the avifauna of the Nearctic Region has been worked out with a thoroughness that cannot be claimed for any other of the zoogeographical regions. This most satisfactory result is in no small measure due, we believe, to the fact that our western cousins long since adopted enlightened plans of procedure when electing to devote their attention to the Nearctic Region as a whole. In this respect they may be said to be far in advance of their European confrères, and what a contrast we in Britain afford. With us the rank and file of our naturalists are content to be for ever studying our Insular fauna as if it were an important natural region in itself, forgetting our direct relationship to the continent of the Palæarctic region, whose western portion, at least, should form the area for their studies. We believe this regrettable state of things is to some extent pardonable, since it is in no small measure the direct result of the want of a Manual on European Birds, like the one for North America now under our consideration—a book whose object 'is to furnish a convenient Manual of North American Ornithology, reduced to the smallest compass by the omission of everything that is not absolutely necessary for determining the character of any given specimen, and including, besides correct nomenclature of each species, a statement of its natural habitat and other concomitant data.' Such a Manual for European Birds is greatly needed, and would supply a long-felt and undeniable blank in the literature of a popular subject; it would also stimulate our younger ornithologists to better—because more

Naturalist,

useful—work, and give them broader ideas than those now held. Moreover, although we have Mr. Dresser's magnificent and encyclopædic volumes on the 'Birds of Europe'—a work of which all Englishmen may feel justly proud, but one of the many books on a favourite study that can, from their costliness, be commanded by comparatively few—this book, strange to say, stands alone as the only work worthy of attention on the European (Western Palæarctic) avifauna, in any language. North America, on the contrary, has and has had a number of good books, both costly and cheap, devoted to its feathered tribes, and the result is, its avifauna has been worked up, not only to a great pitch of perfection for so large a natural region, but its birds are familiar to the whole body of its ornithologists—a most happy state of things, resulting in the younger naturalists knowing exactly where there is an opening for their investigations. These manuals have another distinct use—they are a most desirable *vade mecum* for the traveller, since they readily go into a corner of the portmanteau. Mr. Ridgway's Manual is not intended to be in any sense a popular treatise; it is eminently a student's book, the descriptive portion of it being based upon the 'key' principle throughout. By this method the consulter is conveyed by means of clear diagnostic characters, based entirely upon external peculiarities, from the orders through families and genera to species and sub-species, which are described in all phases of their plumage. It is the production of one of the most accomplished of living ornithologists, who, as Keeper of the Department of Birds in the United States National Museum, has had the unrivalled collections of that institution at his command, and the result is, in every respect, a thoroughly reliable Manual, based upon the latest lines laid down by scientific ornithologists. The 464 outline figures of generic characters, contained on 124 plates, will be welcome, because useful, not only to American naturalists, but to ornithologists generally. These plates have been produced by what is known as the 'Jewett' process, and are quite marvels for their wonderful clearness. The frontispiece to the book is devoted to an artistic portrait of him who was Nestor of American ornithologists—the late Spencer Fullerton Baird.

In THE BIRDS OF WILTSHIRE—one of the latest additions to the series of County avifaunas—we have a marked contrast to Mr. Ridgway's Manual, which will, no doubt, be considered by some as too scientific and advanced; while the Rev. Mr. Smith's book is decidedly retrograde. An author is certainly fully entitled to his convictions, but we, on seeing our old familiar friend the Swift regarded as a species of the Swallow family (*Hirundinidæ*), confess to

having rubbed our eyes and wondered if it could really be true that even the most widely acknowledged advances in ornithological science made during the past quarter of a century could have been so thoroughly ignored. The above however is only an instance of the methods of this book so far as nomenclature and classification are concerned, and we admit that these are matters of quite minor importance in a faunal work. Moreover, the author very properly tells us—in the prospectus that—‘This book, however, makes no pretensions of a scientific character, nor does it adopt the classification and nomenclature of the most modern school, but rather follows in the wake of “Yarrell” [but certainly not the last and much the best edition], which was the universally accepted text-book of ornithologists until within the last few years. In short, it professes nothing more than to be a plain account of the Birds of Wiltshire, written for Wiltshire people by a Wiltshire lover of birds.’ The author has had much experience in the avifauna of Wiltshire and his notes on the birds of the county are excellent, and of great value, since they are in every respect reliable. Additional information on the various species are here and there given for Norway, Switzerland, Portugal, and Egypt, in which countries the author has travelled. Nor is this all, for every species is described; and sections are devoted to obsolete views on Classification, Nomenclature, and Structure; and to the Faculties, Beak, and Feet of Birds. These in addition to the information in strict keeping with the title of the book swell its pages to 588, making an imposing volume.

MR. ADAMSON’S ‘SOME MORE ILLUSTRATIONS OF WILD BIRDS’ will be welcome to field-ornithologists, to whom his well-known spirited drawings at once appeal through their vigorous accuracy. In this new series, however, more attention has been paid to the finish of the pictures, which are finely reproduced in monochrome lithography, and thus while they retain their charming power they also possess in addition the artistic merit of highly-finished drawings. The book is nicely got up and is not out of place on the drawing-room table of an ornithologist.

NOTE—LEPIDOPTERA.

The Locality for certain Agrotidæ.—In the Bibliography (Lepidoptera, 1885-6-7) in the March number of *The Naturalist*, there are seven notices to which my name is attached, the first of which, ‘on the identity of certain Agrotidæ,’ is very misleading, owing to its being dated *Darlington*. This occurred through the notice in question being sent from a village in Teesdale, where I was staying for a few days, and the post town of which is Darlington; of course, Hartlepool should be substituted for Darlington, and then the matter is intelligible, for I should very much question such a coast-loving species as *A. valligera* ever having been taken so far inland as Darlington.—J. GARDNER, 8, Friar Terrace, Hartlepool, 20th March, 1888.

LINCOLNSHIRE MARSH AND WATER PLANTS.

REV. WILLIAM FOWLER, M.A.,

Vicar of Liversedge; Vice-President of the Yorkshire Naturalists' Union.

THE plants included in the present paper are those which grow either in the rivers, drains, marshes, or pools of the county, or on their banks. By some (whose only idea of Lincolnshire is, that it is flat from end to end, and full of drains) it may be thought that water-loving plants may be found in almost every parish. This, however, is by no means the case. Large portions of the county (the Chalk and Oolitic and Liassic ranges of hills, for instance) are quite as little likely to produce such plants, as the Gogmagog hills of Cambridgeshire, or the Cleveland hills of Yorkshire. It is only in the low-lying districts, of course, that marsh and water plants are found, such as the Isle of Axholme; the neighbourhood of the Foss Dyke near Lincoln; the belt of marsh land near the coast, as about Grimsby, Saltfleet, and Skegness; the valley of the river Witham between Lincoln and Boston; and the south-eastern corner of the county, as about Boston Spalding, Deeping, and Holbeach. In the following list, as in former ones, localities will be given only for such plants as do not seem to be universally distributed throughout the county, or, being so, are of special interest.

Thalictrum flavum. On banks of drains, specially in the south.
Ranunculus circinatus, R. fluitans, R. trichophyllus, R. Drouettii, R. peltatus, R. Baudotii (with var. *marinus*), **R. Flammula**, are common or frequent. **R. Lingua** is less so, but may be found near Saltfleet, Washingborough, and the Foss Dyke near Lincoln.

Caltha palustris.

Nuphar luteum. Nocton Delph, and other drains.

Nymphæa alba. Nocton Delph; Twigmoor; pools on Scotton Common.

Nasturtium sylvestre. Trent banks; Crowland.

Nasturtium palustre.

Nasturtium amphibium. Foss Dyke; near Haxey.

Barbarea vulgaris.

Barbarea stricta. Ditch bank near Corby; Bank of the river Ancholme (Lees).

Lychnis Flos-cuculi.

Stellaria aquatica. Beckingham; Foss Dyke.

Stellaria palustris and *S. uliginosa*.

Montia fontana.

Hypericum quadrangulum and *H. quadratum*.

Althæa officinalis. On the banks of drains about Wainfleet, Holbeach, and Boston.

Spiræa Ulmaria.

Hippuris vulgaris. Abundant in South Lincoln.

Myriophyllum verticillatum. Saltfleetby.

Myriophyllum spicatum and *M. alterniflorum*, frequent.

Callitriche stagnalis and *C. obtusangula*.

Lythrum Salicaria.

Peplis Portula.

Cicuta virosa. Never seen by me; but recorded for South Lincoln.

Sium latifolium. Not uncommon in South Lincoln, but only occurring sparingly in North.

Sium erectum.

Œnanthe fistulosa, *Œ. lachenalii*, and *Œ. phellandrium*.

Galium palustre, and *G. uliginosum*.

Eupatorium cannabinum. Frequent.

Pulicaria dysenterica.

Bidens cernua. Saltfleetby; Frodingham.

Bidens tripartita. Not a common plant.

Petasites vulgaris.

Senecio aquaticus.

Cnicus palustris.

Hottonia palustris. Frequent in ditches and pools.

Lysimachia vulgaris.

Samolus valerandi. Haxey; Saltfleetby; Deeping St. James.

Symphytum officinale. On ditch banks in South Lincoln.

Myosotis cæspitosa, *M. palustris* (with var. *strigulosa* Reichb.).

Solanum Dulcamara.

Scrophularia aquatica.

Veronica Anagallis and *V. Beccabunga*.

Utricularia vulgaris. Not very common.

Mentha hirsuta and *M. sativa*.

Lycopus europæus.

Scutellaria galericulata.

- Stachys palustris*.
Littorella lacustris. Scotton Common.
Polygonum amphibium.
Rumex palustris. Frequent in South Lincoln, and about Wainfleet.
Rumex Hydrolapathum.
Rumex maximus Schr. (Beeby). River Welland.
Alnus glutinosa.
Salix fragilis, *S. alba*, *S. triandra*, *S. purpurea*, *S. viminalis*,
S. Smithiana, *S. cinerea*, and *S. Capræa*.
Ceratophyllum demersum. Brick ponds near Brigg.
Elodea canadensis.
Hydrocharis Morsus-ranæ. Plentiful about Saltfleetby.
Stratiotes aloides. Plentiful in the ditches on the east coast.
Iris Pseudacorus.
Juncus effusus, *J. conglomeratus*, *J. glaucus*, *J. supinus*,
J. lamprocarpus.
Juncus obtusiflorus. Far less common than the foregoing.
Typha latifolia and *T. angustifolia*.
Sparganium ramosum and *S. simplex*.
Sparganium minimum. Ditches near Nocton Delph, and New Idle river, in the Isle of Axholme; Scotter Common.
Acorus Calamus. Not seen by me, but reported by Mr. Mason of Alford, as growing in that neighbourhood.
Lemna trisulca, *L. minor*, *L. gibba*, *L. polyrrhiza*.
Alisma Plantago.
Sagittaria sagittifolia.
Butomus umbellatus. Not very common.
Triglochin palustre.
Potamogeton natans, *P. polygonifolius*, *P. lucens*, *P. perfoliatus*, *P. crispus*, *P. densus*, *P. pectinatus*, with
var. *scoparius*.
Potamogeton rufescens. Saltfleetby.
Potamogeton plantagineus. Barnetby (Lees).
Potamogeton heterophyllus. Double rivers, Isle of Axholme.
Potamogeton obtusifolius. River Ancholme (Lees).
Potamogeton flabellatus Bab. Pools near the Wash.
Zannichellia palustris (as segregate). New Idle River.
Zannichellia pedicillata Fr. Littleworth (Beeby).

Eleocharis palustris.

Scirpus lacustris.

Scirpus tabernæmontani Gmel. Not common.

Carex disticha, **C. vulpina**, **C. ovalis**, **C. acuta**, with var. **prolixa** Fr.; **C. Goodenowii** Gay, **C. glauca**, **C. pallescens**, **C. panicea**, **C. flava**, **C. paludosa**, **C. riparia**.

Carex Pseudo-cyperus. Foss Dyke, near Lincoln. About Bourn and Spalding. Deeping St. James.

Calamagrostis epigeios.

Deschampsia cæspitosa.

Phragmites communis.

Catabrosa aquatica.

Glyceria fluitans, **G. aquatica.**

Glyceria plicata. Ditch near Blyton.

Equisetum maximum, **E. palustre**, **E. limosum.**

If the above list be not as full as might have been expected for a county like that of Lincoln, it must be remembered that it is a county in a high state of cultivation, and that the clearing-out of drains periodically, and the mowing of their banks, do not conduce to the maintenance, but to the destruction, of its water-loving flora.

NOTE—LEPIDOPTERA.

Moths attracted by the Illuminations of Lincoln Cathedral.—On June 21st and 22nd in last year, one of the principal Jubilee illuminations in the Eastern counties was produced by the lighting of the great central tower of Lincoln Cathedral by about forty arc incandescent electric lights; this illumination was visible at a distance of fifty-five miles. On the second night I went up the tower about eleven o'clock, and noticed that several moths were flying about; I only had a few minutes on the tower, but picked up two, which turned out to be *Leiocampa dictæa* and *Acronycta alni*; other moths were flying up to the light, and the men in charge told me that they had been very numerous on both nights. I have no doubt that a large and interesting number of species might have been taken. Any person who is acquainted with the height of the great tower of Lincoln above the fens cannot help being struck by the perpendicular distance which these moths must have flown from the surrounding county.—W. W. FOWLER, Lincoln, Feb. 27th, 1888.

NOTE—MAMMALIA AND FISHES.

Whale at Flamborough.—Lent is going out with a vengeance; no matter what quarter the wind blows from we have nothing but violent gales, and the sea terribly rough, sending in tremendous breakers. Several more Congers (*Conger vulgaris*) have been picked up by the fishermen. Yesterday morning, to his very great surprise, one of our sturdy young fishermen came upon the Bottle-nosed Whale washed ashore alive at Danes Dyke, near to the residence of Mrs. Cattrell Dormer. The whale is a most splendid specimen, with two pectoral fins, one dorsal fin, no ventral fin; belly, silvery white, with several pencil-like lines extending from lower jaw behind the pectoral fins; back, cloudy-dark or black, with two blow-holes right on top of the head; mouth, when open, extends a little over 2 ft., with a beautiful kind of fringe round the jaws; measurement, length over all, 16 ft.; round shoulders, 9 ft.—MATTHEW BAILEY, Flamborough, March 14th, 1888.

Naturalist,

YORKSHIRE NATURALISTS' UNION: 26th ANNUAL REPORT.

IN presenting the twenty-sixth annual report the Executive Council have to state that the Union still remains in a flourishing and prosperous condition, with the result that both at its excursions and by the individual researches of its members and associates much good work is being done towards the investigation of the fauna and flora and physical features of the county. It is peculiarly the task of the county Society to undertake work of a character which is beyond the scope of the local Societies which in Yorkshire are so numerous and so active, and that the Union is fully alive to the responsibilities which are thus entailed upon it, is fully evidenced by the publication recently of the handsome and singularly complete volume upon the Flora of West Yorkshire from the pen of Mr. F. Arnold Lees, by the commencement of the issue of a new and revised edition of Mr. J. Gilbert Baker's classical and very scarce work on North Yorkshire, and by the success which has attended the operations of the Yorkshire Boulder Committee and of the sister committee for investigating the Marine Zoology of the Yorkshire Coast.

The Meetings held during the year have been five in number, the places and dates being as follows:—Saltburn-by-the-Sea, Whit-Monday, 30th May; Gormire Lake and Thirkleby Park, Wednesday, 20th July; Sedbergh and Howgill Fells, Monday, 1st August; Welton Vale, Saturday, 27th August; Hatfield Chace, Wednesday, 21st September. For each of these excursions the usual fully-descriptive circular which conduces so much to the success of the day's investigations was issued, and at all the meetings some good results were achieved. [The detailed description of each meeting is here omitted, full particulars having from time to time appeared in this journal].

On all these occasions the Union has been indebted as of old to the great kindness of the landowners for facilitating research on their estates, and to the Yorkshire Railway Companies for the privileges granted to the members attending the various excursions and meetings.

The Societies which constitute the Union now number 37, being an increase upon the number reported twelve months ago. Two societies—the Beverley and Honley Naturalists' Societies—having ceased to exist, are no longer borne on the roll. On the other hand the addition of the Ackworth School Natural History Society, Brighouse Friends' Botanical Society, Craven Naturalists' Association, Leyburn Literary and Scientific Society, Leeds Y.M.C.A. Naturalists' Club, Scarborough Philosophical Society, and Thirsk

Natural History Society, seven strong societies—is evidence that the active study of natural science in Yorkshire—partly due to the stimulus given by the periodical visits of this Union to the various parts of Yorkshire—is steadily on the increase.

The statistics which the secretaries of the various societies are obliging enough to furnish, as in previous years, show that the number of Associates (that is, of the aggregate membership of the affiliated societies) is now 2,109, which being added to the direct membership makes a sum total of nearly 2,500 members and associates.

The Membership still continues to be a source of anxiety to your Executive Council, inasmuch as it remains stationary at about 375, in spite of the very strong claims which the Union—as the central and county Society—has upon the support of all Yorkshire naturalists.

The Financial Position of the Union continues to be in a sound and healthy condition.

The Local Treasurers continue to be a much-valued help to your Secretaries and Executive, and are of much service to the members who reside in their respective districts.

The Publications of the Union have been as heretofore, with the addition of the long-expected and recently-issued *Flora of West Yorkshire*.

The Transactions.—Parts 10 and 11 are now ready, and will be distributed in course of a few weeks. The former part contains papers on Yorkshire Botany, and a continuation of the Rev. W. C. Hey's List of Yorkshire Beetles. The latter part is entirely devoted to the first instalment of Mr. Baker's North Yorkshire, illustrated by a remarkably clear and distinct geological map of the North Riding.

The two parts which will succeed those first mentioned are intended to be mainly devoted to continuing this valuable work, which the Union is fortunate in having had placed at its disposal by its distinguished author. The geology, which forms the instalment about to be issued, has been carefully revised to date by Mr. J. Edmund Clark, of York, and the map which accompanies it, is an exceptionally successful and clear one. The chapters on lithology and climatology, which the author has himself revised, are now being printed, and they will be followed by the *Flora* proper. This is also brought down to date, and includes the observations of later investigators. The chapter on mosses has been confided to Mr. Matthew B. Slater, of Malton, than whom no one is more competent to deal with the subject. Mr. Slater will also add, what was not in the original edition, a list of the North Riding hepatics.

The West Yorkshire Flora has now been issued to the subscribers. It is in every respect a credit to its author and his collaborators, from its remarkable completeness, accuracy and fulness of detail, and handsome appearance. It forms a portly volume of about 850 pages, and is—as Mr. Baker informs us—the most complete work of its kind which has appeared for any district of comparable extent in the world. It will always be to the credit of the Union that it was the means of finally bringing about the production of so useful a work.

The Naturalist has been regularly and punctually published month by month, and has formed a convenient and much-appreciated vehicle for communications relating, not only to Yorkshire, but to the whole of the North of England. All that it needs is such an increase in the number of subscribers as will not only place the balance on the right side of the account, but also provide funds for improving the journal, by enabling its editors to give occasional illustrations.

The Library of the Union has been largely increased during the year, partly by purchase, but mostly by donations from members and friends, including Messrs. S. A. Adamson, W. Eagle Clarke, Rev. Canon Fowler, J. G. Goodchild, J. H. Gurney, jun., J. A. Harvie-Brown, J. E. Harting, Alfred Harker, P. F. Lee, Prof. G. A. Lebour, J. C. Melvill, R. T. Manson, F. Nicholson, E. E. Prince, R. Ridgway, T. Mellard Reade, W. D. Roebuck, R. Spruce, Rev. W. Thompson, etc.

The Union being a subscriber to the *Zoological Record*—a most important annual publication—availed itself during the year of purchasing, on very advantageous terms, the complete set of back volumes. A similar opportunity of filling up to a large extent the gap which exists in the Union's set of the *Zoologist* was also made use of. Amongst the other books which have been added are Canon Fowler's new work on British Coleoptera, Mr. Ridgway's on Colour for Naturalists, Mr. Thompson's *Florula Sedbergensis*, Mr. Mellard Reade's *Origin of Mountain Ranges*, Prof. Lebour's *Geology of Northumberland and Durham*, and Harvie-Brown and Buckley's *Vertebrate Fauna of Sutherland and Caithness*.

The Executive take this opportunity of acknowledging the services of Mr. Chas. Brownridge as Honorary Librarian during the year. Thanks to him, the Library has been put in order, ready for the preparation of the catalogue, a necessary preliminary to members being able to make use of the books.

The books and other property of the Union are stored at the Leeds Mechanics' Institute, through the kindness of its Committee,

to whom the Executive are under great obligation for the use of the Board-room for their meetings.

The Librarian will be pleased at any time to receive from members copies of suitable books, particularly of works written or published by themselves or dealing with Yorkshire natural history or geology.

The Sections of the Union have carried on their work during the year with the energy and success of former years, and their operations have tended much to the success of the various meetings.

Committees of Research.—During the year the two Committees which were appointed at the last annual meeting for specific research have carried on their operations with success.

The Yorkshire Boulder Committee has already scheduled a large number of erratics, and have duly published the results. The value of their work has been borne witness to by the Boulder Committee of the British Association, who state that were similar committees formed in other counties and their operations carried on with the same vigour and success as in Yorkshire, the work of the British Association Committee would soon be brought to a satisfactory conclusion.

The other Committee, that for investigating the Marine Zoology of the Yorkshire Coast, although they have not as yet published their results, have been working quietly at their subject. A goodly number of specimens have been sent in and recorded for the future use of the Committee.

British Association.—The Union has again been selected as one of the associated societies of the British Association, and at the Manchester meeting (which was largely attended by members of this Union) Mr. C. P. Hobkirk, chairman of the Executive, was the official representative at the Conferences of Delegates of Scientific Societies.

Proposed Alteration of the Constitution.—Your Executive have given very careful consideration to the question which a resolution of the last Annual Meeting placed in their hands, and are unanimously of opinion that the present regulations for the election of the General Committee of the Union are calculated to meet all the requirements that can legitimately arise, and that the rules being sufficiently comprehensive and practicable in their present form, do not need amendment.

The Secretariate.—Your Executive have to express their satisfaction that the heavy labour which the work of the Union entails upon its honorary secretaries has been substantially relieved by the appointment at the last annual meeting of Messrs. P. H.

Naturalist,

Grimshaw and W. C. Scott as Honorary Assistant Secretaries, each of whom has taken charge of a definite branch of work which would otherwise have fallen as of old upon the Honorary Secretaries.

The Presidency of the Union for 1888 has been offered to and accepted by a well-known Yorkshire geologist, intimately connected with the district in which the present annual meeting is being held, and in Mr. Wilfrid H. Hudleston, M.A., F.R.S., who is one of the Secretaries of the Geological Society of London and an Editor of the Geological Magazine, and whose monographic papers on the palæontology of the Oolitic Rocks of Yorkshire are so well-known, we have a worthy successor in the series of distinguished Yorkshiremen who have for the past ten years presided over the Yorkshire Naturalists' Union.

In conclusion, the Executive have to express a regret, which will be unanimously shared by the members, that Sir Ralph Payne-Gallwey could not honour the Union by accepting the office of President for the customary second year. They have also to express gratification at the success which has, under Sir Ralph's presidency, attended the proceedings of the Union during the past year.

NOTE—COLEOPTERA.

Quedius longicornis at Hartlepool.—I have recently had some beetles returned from my friend Mr. W. G. Blatch, of Birmingham, to whom I had sent them to name, and amongst others of less note I was pleased to observe three specimens of the rare species *Quedius longicornis* Kr., which were captured on our sandhills during last summer. This is new to the Northumberland and Durham list, not appearing in Bold's Coleoptera of the two counties, and is a valuable addition.—J. GARDNER, 8, Friar Terrace, Hartlepool, 20th March, 1888.

NOTE—BOTANY.

Some Ingleton Plants.—I send the names of a few of the plants we used to find in the neighbourhood of Ingleton fifteen or twenty years ago. It will be very interesting to me to hear whether they are still to be found.

In the 'Helks,' the large wood below the Thornton Falls, *Convallaria majalis* was abundant, *Polygonatum multiflorum* rather uncommon, while the 'find' was the *Daphne mezereum*; though I am not aware of any other place in the North of England where it is said to be really wild, I think it was so here.

On some rocks above Thornton Force a root of *Asplenium germanicum* has been found.

In King's Dale on the side of Gragreth was a solitary clump of *Epilobium hirsutum*, and *Aspidium louchitis* has been found on the neighbouring rocks, though very uncommon.

On the way to the Ingleton Falls I have found *Pinguicula vulgaris*, *Primula farinosa*, *Trollius europæus*, *Polypodium dryopteris*, and *P. phegopteris*.

Ophrys muscifera has been met with between, I think, the two rivers.

On an old wall between Ingleton and Kirkby Lonsdale the *Ceterach officinarum* used to grow.—R. E. LEACH, M.A., St. Mary's Cottage, Beccles, Suffolk, March 9th, 1888.

THE YORKSHIRE NATURALISTS' UNION: ANNUAL MEETING AT MALTON.

THE Twenty-sixth Annual Meeting, held this year at Malton, on Wednesday, the 7th of March, was an extremely successful and pleasant one—a result for which the exertions of the members of the Malton Society (which enjoys a high place among our local societies) are in the main responsible. By the courtesy of the Committee of the Malton Institute, various rooms in that building were placed at the Union's service. The proceedings commenced at 3.15 p.m., when the General Committee met in the Museum for the transaction of the Union's business. The attendance included the official delegates of seven societies (eleven others being unofficially represented by Permanent Members of the Committee), the two honorary secretaries and one honorary assistant-secretary, the honorary librarian, four presidents and seven secretaries of sections, two other members of the Executive, and twelve other Permanent Members of the General Committee—making a total of forty. The Rev. E. Maule Cole, M.A., a vice-president, occupied the chair. The minutes of the preceding annual meeting were read, discussed, and then unanimously adopted, on the motion of Mr. Erskine Stuart, seconded by Mr. S. A. Adamson.

The Twenty-sixth Annual Report was then read by the secretaries, together with the certificate of the auditors to the effect that the accounts had been duly examined and found to be correct, after which the Reports were adopted, on the motion of Mr. John Stears (Hull), seconded by Mr. Washington Teasdale, F.R.A.S. (Leeds).

The excursion-programme for 1888 was then fixed as follows, on the recommendation of the Executive, unanimously confirmed on the motion of Mr. J. J. Stead (Heckmondwike), seconded by Mr. P. F. Lee (Dewsbury):—

Leyburn; Whit-Monday, 21st May.

Saddleworth; Saturday, 16th June.

Robin Hood's Bay; Monday, 16th July.

Market Weighton, for the Wolds; Bank Holiday Monday, 6th August.

Fungus Foray, with Meetings at Leeds, about the end of September.

It was then decided, on the motion of Mr. W. Denison Roebuck, F.L.S., seconded by Mr. J. W. Addyman, B.A., that for the purpose of arranging excursions in future years, the five districts of the county be Mr. Cottrell Watson's well-known botanical divisions, viz.: South-East York, North-East York, North-West York, Mid-West York, and South-West York. The principal changes involved are the

division of what is now the North-Western Hills district into two districts, and the abolition of the Central district, decided advantage being likely to accrue from the increased facility for visiting the Western dales.

Proceeding to the election of officers, it was first announced that, as stated in the concluding paragraph of the Report, Mr. W. H. Hudleston, M.A., F.R.S., had accepted the presidency. The two retiring Hon. Secretaries (Wm. Denison Roebuck, F.L.S., and Wm. Eagle Clarke, F.L.S., both of Leeds) were re-elected, as were also the two retiring Hon. Assistant Secretaries (Percy H. Grimshaw, Burley-in-Wharfedale, and W. Cecil Scott, Leeds), the retiring Hon. Librarian (Charles Brownridge, F.G.S., Leeds), the ten retiring members of the Executive (S. A. Adamson, F.G.S., Leeds; Wm. Cash, F.G.S., Halifax; J. W. Davis, F.S.A., Halifax; G. C. Dennis, York; John Emmet, F.L.S., Boston Spa; Rev. Wm. Fowler, M.A., Liversedge; Charles P. Hobkirk, F.L.S., Dewsbury; Benjamin Holgate, F.G.S., Leeds; H. T. Soppitt, Bradford; and J. J. Stead, Heckmondwike), and the two retiring Auditors (J. E. Bedford and C. D. Hardcastle, both of Leeds).

The Committees of Research were then appointed.

The Yorkshire Boulder Committee was re-appointed, consisting of Prof. A. H. Green, M.A., F.R.S., Leeds (chairman); C. D. Hardcastle, Leeds (vice-chairman); S. A. Adamson, F.G.S., Leeds (hon. secretary); J. E. Bedford and C. Brownridge, F.G.S., Leeds; S. Chadwick, Malton; Rev. E. Maule Cole, M.A., Wetwang; J. W. Davis, F.G.S., Halifax; W. Gregson, Baldersby; John Hill, Morley; B. Holgate, F.G.S., Leeds; Wm. Horne, F.G.S., Leyburn; Prof. L. C. Miall, F.L.S., Leeds; James Spencer, Halifax; Thos. Tate, F.G.S., Leeds; and J. W. Woodall, F.G.S., Scarborough.

The Yorkshire Marine Zoology Committee was also re-appointed, to consist of the following members:—Dr. H. C. Sorby, F.R.S., Sheffield (chairman); Rev. E. H. Smart, B.A., Kirby-in-Cleveland (hon. secretary); George Brook, F.L.S., Huddersfield; J. Darker Butterell, Beverley; Wm. Cash, F.G.S., Halifax; Wm. Eagle Clarke, F.L.S., Leeds; John Cordeaux, M.B.O.U., Great Cotes; Rev. W. C. Hey, M.A., York; Baker Hudson, M.C.S., Coatham; T. H. Nelson, M.B.O.U., Redcar; O. T. Olsen, F.L.S., Grimsby; and Rev. H. Smith, Redcar; with George Massee, F.R.M.S., Kew, as Botanical Referee.

In addition to these, it was unanimously resolved, on the recommendation of the Executive, and the motion of Mr. W. Cash, F.G.S., that a Committee be appointed for the investigation of the Fossil Flora of the county of York, and that it consist of the following members:—Prof. W. C. Williamson, F.R.S., Manchester

(chairman); W. Cash, F.G.S., Halifax (hon. secretary); S. A. Adamson, F.G.S., Halifax; Thos. Hick, B.A., B.Sc., Manchester; B. Holgate, F.G.S., Leeds; Robert Kidston, F.G.S.; Prof. L. C. Miall, Leeds; James Spencer, Halifax; John Stubbins, F.G.S., Leeds; and William West, F.L.S., Bradford.

It being in the power of the General Committee to add to its own number ten Permanent Members annually, this power was used, Messrs. F. Boyes, Beverley; James Carter, Masham; William Foggitt, Thirsk; Alfred Harker, M.A., F.G.S., Hull and Cambridge University; Wm. Horne, F.G.S., Leyburn; Baker Hudson, M.C.S., Coatham; J. C. P'Anson, F.G.S., Saltburn-by-the-Sea; Rev. Wm. Jessop, F.A.S., Rawdon; T. H. Nelson, M.B.O.U., Redcar; and John Stubbins, F.G.S., F.R.M.S., Leeds.

The unanimous election of Messrs. Robert Barnes, Saltburn-by-the-Sea; Geo. S. Gibb, LL.B., York; the Hon. H. W. Fitzwilliam, M.P., Malton; Zechariah Waite, Whitby; A. W. Walker, Malton; and William Young, M.D., Malton, as members of the Union, followed, all having been duly proposed in writing.

The next business was the selection of the place of the next Annual Meeting, for which invitations were submitted from Sheffield and Halifax—the former town being eventually selected—and the date fixed for Friday, 16th of November next. This concluded the business of the General Committee, which then adjourned.

The sections then met and elected their officers as follows:—

B. Vertebrate Zoology.—Rev. E. Ponsonby Knubley, M.A., M.B.O.U., Rector of Staveley, re-elected president, and Mr. James Backhouse, jun., F.Z.S., M.B.O.U., of York, re-elected secretary, and a second secretary elected in the person of Mr. Thomas Bunker, Goole.

C. Conchology.—Rev. W. C. Hey, M.A., M.C.S., York, re-elected president; Mr. John Emmet, F.L.S., Boston Spa, re-elected secretary, and Mr. Baker Hudson, M.C.S., Coatham, chosen secretary in place of Mr. Butterell, resigned.

D. Entomology.—All the officers re-elected, viz., Mr. N. F. Dobrée, Beverley, president, and Messrs. G. C. Dennis and Samuel Walker, York, secretaries.

E. Botany.—All the officers re-elected, viz., Mr. F. Arnold Lees, L.R.C.P., Leeds, president; Mr. P. F. Lee, Dewsbury, phanogamic secretary, and Mr. M. B. Slater, Malton, cryptogamic secretary.

F. Geology.—All the officers re-elected, viz., Rev. E. Maule Cole, M.A., Wetwang, president, and Mr. S. A. Adamson, F.G.S., Leeds, and Mr. S. Chadwick, Malton, secretaries.

G. Micro-Zoology and Micro-Botany.—Dr. H. Clifton Sorby, F.R.S., Sheffield, president, and Mr. J. M. Kirk, Doncaster, secretary, both re-elected.

Afterwards tea was served at the Talbot Hotel, and at 7 p.m. the Annual Public Meeting was held in the Theatre of the Malton Institute, when there was a large audience. The chair was taken by the president, Sir Ralph Payne-Gallwey, Bart., M.B.O.U., who, after the annual report and excursion-programme had been read for the benefit of the members generally, delivered the annual address. He took for his subject, 'Yorkshire Decoys and the Method of Decoying Ducks,' illustrating his remarks by a series of lantern-slides. During the delivery of the address the chair was occupied by the Rev. R. W. Elliott, M.A., one of the vice-presidents of the Malton Naturalists' Society. A vote of thanks to the president for his services as such and for his address was cordially voted, on the motion of Mr. John Cordeaux, M.B.O.U., seconded by the Rev. W. C. Hey, in a couple of happily-expressed speeches, and afterwards a similar and well-deserved compliment was paid to the Malton Society for its reception of the Union and to the Rev. R. W. Elliott for presiding, on the motion of the new president, Mr. Wilfrid H. Hudleston, M.A., F.R.S., seconded by the Rev. E. Maule Cole, M.A.

An excellent and most interesting exhibition, which had been arranged by the members of the Malton Society, was open throughout the afternoon and evening, and engaged the attention of the members and associates during the intervals between the various meetings. The objects shown were of a varied character, and were contributed by numerous local gentlemen and ladies, hardly any branch of natural history, art, or antiquities being unrepresented. In addition to this the splendid little museum of the Malton Society was open to inspection.

In Memoriam.

THOMAS LISTER.

IN the death of Mr. Thomas Lister, of Barnsley, Yorkshire naturalists have lost a veteran and enthusiastic comrade, while the Barnsley Naturalists' Society and the Yorkshire Naturalists' Union have to mourn the passing away of an old office-bearer.

Thomas Lister was born at the Old Mill Wharf near Barnsley, on the 11th February, 1810. A member of the Society of Friends, he received his education at the Friends' School at Ackworth, afterwards working with his father, who was a gardener and small farmer. In 1839 he accepted the postmastership of Barnsley. He remained post-

master till 1870, when he retired on a pension, and received a handsome testimonial from his fellow-townsmen in appreciation of his long and faithful services. In his youth he was active and athletic, fond of travel, and occasionally performing remarkable pedestrian feats when visiting the English lake-country, and prolonging his journey into Scotland, where he made many friendships amongst literary men. This was in 1837, and in the following year he visited the Continent, where, after crossing Mont Cenis, he rambled leisurely through the great valleys of Piedmont and the plains of Lombardy, visiting Milan, Turin, and other Italian cities. He then skirted the shores of the Italian lakes, and passing over the Alps, visited Switzerland and then the Netherlands. Then intervened the thirty years of official life, but after his retirement in 1870 the old travelling instincts re-appeared, and Mr. Lister seldom or never failed to accompany the British Association, of which he became a member, wherever it went, even on the occasion of the Canadian gathering, which gave him the opportunity of visiting relatives of his own who had settled in the colony.

Mr. Lister was of a bright and happy disposition, and well-known to hosts of appreciative friends. His reputation was both literary and scientific. He occupied a fairly high position among the local poets of Yorkshire, his principle productions being the 'Rustic Wreath' (1834), 'Temperance Rhymes' (1837), and 'Rhymes of Progress' (1862), each of these being collections of short poems.

Mr. Lister was a field-ornithologist who knew well (none better), by ear and by eye, the birds which inhabited the woods and hedgerows of his beloved valley of the Dearne. On several occasions he has published lists of the birds of the Barnsley district. Beyond this sound practical acquaintance with the familiar birds of his native district, he made no pretensions to ornithological fame. He was a regular and diligent frequenter of the meetings of the old West Riding Consolidated Naturalists' Society, and when this became the Yorkshire Naturalists' Union of to-day, the new departure had no more staunch supporter than Thomas Lister, who was made first Secretary, and afterwards became President, of the Vertebrate Section of the Union.

Mr. Lister was married, but childless, and his wife died several years ago. During the past winter he suffered from a bronchial affection. On the 16th of March he had a stroke, followed by another on the 21st, from which he never rallied, and on the 25th he passed away, from congestion of the lungs, aged 78. He was buried on the 29th in the Friends' burial-ground, Barnsley. His end was conscious and peaceful, and a couplet from the last of his own poems, written but a day or two before his illness, is singularly appropriate—

And lastly, our day is closed with devotion
To Him who all space His Majesty fills.

Naturalist,

3 APR 1883



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BOOKS RECEIVED.

Civico Museo e Raccolta Correr in Venezia. Collezioni di Storia Naturale. I. Collezioni Botaniche. L'Algarium Zanardini—per G. B. De-Toni e David Levi. Venezia 1888, 8vo, 144 pp. and portrait of G. Zanardini. [The Authors. Notarisia, Ann. III, No. 10, Aprile 1888. [G. B. De-Toni e D. Levi-Moreno, Redattori. Mittheilungen des Ornithologischen Vereines in Wien, xii Jahrg., Nr. 4, April 1888. Scottish Naturalist, No. xx, New Series, April 1888. [Prof. J. W. H. Trail, Editor. Journal of Microsc. and Nat. Science, April 1888. [Alfred Allen, Editor. The Scientific Enquirer, vol. iii, No. 28, April 1888. [Alfred Allen, Editor. Psyche, a Journ. of Entom. Vol. v, No. 143, March 1888. [Camb. Ent. Club, U.S. Science Gossip, No. 280, for April 1888. [Messrs. Chatto & Windus, Publishers. The Wesley Naturalist, No. 14, for April 1888. [The Wesley Scientific Society. Trans. of the Manchester Geological Soc., vol. xix, Parts 16 & 17. [The Society. The Young Naturalist, Part 100, for April 1888. [Mr. John E. Robson, Editor. Trans. of the Leeds Geological Association, Part 3. 1886-7. [The Association. The West American Scientist, vol. iii, No. 28, August 1887. [C. R. Orcutt, Editor. The Midland Naturalist, No. 124, for April 1888. [Birmingham Nat. Hist. Soc. Birmingham N. H. S.—List of Members and Balance Sheet for 1887. [The Society. Yorkshire Notes and Queries, Part 11, April 1888. [J. Horsfall Turner, Editor. Nat. Hist. Journ., No. 102, April 14, 1888. [J. E. Clark & B. B. Le Tall, Editors. Journal of Conchology, Vol. v, No. 10, April 1888. [J. W. Taylor, Editor. An Indictment of Darwin. By Oswald Dawson. Small 8vo., 36 pp. [The Author.

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THE FLORA OF WENSLEYDALE, NORTH-WEST YORKSHIRE.

JOHN PERCIVAL, B.A.,
St. John's College, Cambridge.

WENSLEYDALE is situated in the north-west division of Yorkshire. The district over which my observations have extended includes the main valley of the Yore, between Hawes and Leyburn, together with the smaller valleys which join it between those limits. The chief rocks met with in the district are limestones belonging to the Yoredale series. Small bands of grit occur in the series, but mill-stone grit only occurs in isolated patches on the highest points, as Penhill, 'Grits' above Carperby, and Stags Fell near the head of the dale.

The altitudinal range of the district is between about 350 ft. and 2,000 ft.—the river-bed at Leyburn being about 350-400 ft., and the summit of Penhill about 2,000 ft. above sea-level. The fruticose Rubi are, of course, poorly represented.

I have to thank Mr. F. Arnold Lees for kindly supplying a good many stations referring to the upper part of the dale, and also Mr. J. G. Baker, F.R.S., for kindly examining the Rosæ.

Anemone nemorosa L.

Ranunculus Drouetii Schultz. In bogs under Wegber Scar, Carperby, 1,150 ft.; and in brook near Hawes Railway Station.

Ranunculus heterophyllus Fries. In stream near West Burton; and in Eller Beck, Carperby.

Ranunculus Lenormandi Schultz. In boggy places above Hardraw, on both sides of the road leading from Hawes to Muker; and on Penhill.

Ranunculus Flammula L.

[**Ranunculus Lingua** L. Semerwater (Baker's 'North Yorkshire.') Not seen by me].

Ranunculus auricomus L., **R. acris** L., **R. repens** L., **R. bulbosus** L., and **R. Ficaria** L.

Caltha palustris L.

Trollius europæus L. Pretty abundant throughout the valley.

Helleborus viridis L. East end of Leyburn Shawl (Mr. W. Horne!); and in pasture about a quarter of a mile south-east of Thoresby Green, Carperby (about 600 ft.).

- Aquilegia vulgaris** L. In Freeholder's Wood, Carperby; about Aysgarth Falls; and in Shaw Gill, Hardraw.
- Actæa spicata** L. On both sides of the stream near the Whitfield Gill Waterfall, Askrigg.
- Berberis vulgaris** L. Woodhall Scar (? planted); possibly indigenous on wall south-west of Castle at Bolton, and in fields behind church there.
- Nuphar lutea** Sm. In the Bain, extending about half a mile below Semerwater Lake (820 ft.).
- Papaver Argemone** L. Ascends the valley to Carperby (720 ft.).
- Papaver dubium** L. and *a.* **Lamottei**. Ascends to Askrigg.
- Papaver Rhæas** L. Ascends to Carperby.
- [**Meconopsis cambrica** Vig. Mossdale Head (Mr. Brunton). Not seen by me].
- Chelidonium majus** L. By the roadside between Preston and Wensley.
- Fumaria officinalis** L. Casual; up the valley as far as Hawes.
- Brassica Napus** L. (?) Occasional; among waste about cultivated fields.
- Sisymbrium officinale** Scop. Not common. West of Carperby and near Preston.
- Sisymbrium Alliaria** Scop.
- Cardamine amara** L. Pretty abundant. Ascends Gayledale to 1,000 ft. (F. A. Lees).
- Cardamine pratensis** L., **C. hirsuta** L., and **C. sylvatica** Link.
- Arabis hirsuta** Br.
- Barbarea vulgaris** Br. By no means frequent; up as far as Hawes.
- Nasturtium officinale** Br. Ascends to Askrigg (about 600 ft.).
- Nasturtium palustre** DC. In abundance by the side of the pond at Carperby (about 700 ft.). The pond is now being drained.
- Cochlearia officinalis** L. *b. alpina*.
- Draba verna** L. *a. brachycarpa*. Not unfrequent on old walls and rocks in the upper part of the valley.
- Draba incana** L. Frequent on nearly all the upper and middle limestone scars.
- Thlaspi alpestre** L. *b. occitanum*. In great abundance along the banks of Eller Beck; near Hawbank lead-mines and about the old lead-mines in Ox Close, Carperby.

Teesdalia nudicaulis Br. Very sparingly at the Leyburn flagstone quarries.

Hutchinsia petræa Br. Pretty evenly distributed on all the scars from the head of the valley down as far as Preston.

Capsella Bursa-pastoris Mœnch. Not common higher than Askrigg (700 ft.).

[Lepidium campestre Br. Recorded in Baker's 'North Yorkshire' as ascending to Appersett Bridge above Hawes, but not seen by Mr. F. A. Lees or myself in any part of the dale.]

Reseda Luteola L. Rare. Near the railway embankment at Redmire Station; and by road-side above Leyburn Shawl.

Helianthemum vulgare Gaert.

Viola palustris L.

Viola odorata L. Near river below Thoresby Green; in the Freeholder's Wood, Carperby; Yore bank above Askrigg Station; and Bain Gill.

Viola hirta L.

Viola sylvatica Fries, *a.* **Riviniana.** Common.

b. **Reichenbachiana.** Frequent in lower part of valley, but does not apparently ascend to Hawes. New to vice-county 65 of Watson's 'Topographical Botany.'

c. **velutina** Lees. A downy-leaved variety, at first thought to be *V. arenaria*, until fruit was obtained; grows very locally on a stiff till-slope by the Mossdale stream.

Viola tricolor L. Occasional; not permanent.

Viola lutea Huds. Abundant in moorland pastures, especially on the north side of the valley.

Drosera rotundifolia L. Locker Tarn, Carperby; in bogs north of Addlebrough, on Thornton Rust Moor, and higher part of dale.

Polygala vulgaris L., and **P. depressa** Wend.

Silene inflata Sm. Ascends to 400 ft. at river-bank, Hawes.

Lychnis diurna Sibth., and **L. Flos-cuculi** L.

Cerastium glomeratum Thuill. Not common.

Cerastium triviale Link.

Stellaria nemorum L. In nearly all the gills of Upper Wensleydale.

Stellaria media With., and **S. Holostea** L.

Stellaria graminea L., and **S. uliginosa** Murr.

Arenaria trinervis L. Not found higher than Aysgarth, 600 ft.

Arenaria serpyllifolia L.

Arenaria leptoclados Guss. Sparingly at the Flag Quarries, Leyburn.

Alsine verna Bartl. Very abundant on many of the scars.

Alsine tenuifolia Crantz. Leyburn Flag Quarries.

Sagina ciliata Fries. Leyburn Flag Quarries (F. A. Lees!).
New to vice-county 65 of Watson's 'Top. Bot.'

Sagina procumbens L., and **S. nodosa** Meyer.

Montia fontana L.

Hypericum calycinum L. In a small wood above Leyburn Shawl; planted.

Hypericum perforatum L.

Hypericum dubium Leers. By the river Yore about the Aysgarth Waterfalls; in Cotterdale at an elevation of 1,250 ft.

Hypericum tetrapterum Fries.

Hypericum humifusum L. Rare. Not seen higher up the dale than the Leyburn Flag Quarries, and there only a few specimens. Plentiful on sandy cart-track in field between Birk Rigg Farm and Mid Mossdale, 1,200 ft. (F. A. Lees).

Hypericum pulchrum L., and **H. hirsutum** L.

Malva moschata L. Leyburn Shawl woods, and in woods about Scarth Nick, 1,000 ft.

Malva sylvestris L. Rather rare. Ascends to Carperby.

Tilia parvifolia Ehrh. One tree by road-side, near Hawbank, Carperby.

Linum catharticum L.

Linum perenne L. Long known about Leyburn Shawl. Mr. W. Horne gathered specimens in 1883 (!), but it has not been seen this year (1887).

Geranium sylvaticum L. Abundant.

Geranium pratense L., **G. molle** L., and **G. dissectum** L.

Geranium columbinum L. On banks about Scarth Nick; and near the Upper Aysgarth Falls in Bearpark.

Geranium lucidum L.

Geranium Robertianum L. Common. Ascends over 1,900 ft. at head of Gayle Beck.

Oxalis Acetosella L.

Ilex Aquifolium L.

Euonymus europæus L. Freeholder's Wood, Carperby; and Leyburn Shawl woods.

Rhamnus catharticus L. Ascends to Hawbank Wood, Carperby.

Acer Pseudo-platanus L.

Acer campestre L. Ascends to Nappa Scar.

Ulex europæus L. Near Nappa Scar; Aysgarth Force; Castle Bolton; and Duerley Brook-side, in Gayledale, 1,800 ft.

Ononis arvensis Auct.

Anthyllis vulneraria L.

Medicago lupulina L.

Medicago denticulata Willd. In sandy crevices of rocks below Aysgarth lowest falls. Introduced by seed from Yore Flour Mills above.

Trifolium pratense L., **T. medium** L., and **T. repens** L.

T. procumbens L., and **T. dubium** Sibth.

Lotus corniculatus L., and **L. major** Scop.

Hippocrepis comosa L. Not unfrequent in several places in the lower part of the dale. Ascends to Carperby (900 ft.).

Vicia hirsuta Koch, and **V. Cracca** L.

Vicia sylvatica L. In Mill and Whitfield Gills near Askrigg; Bolton Gill (Mr. W. Robinson); West Bolton Gill; and Thoraby.

Vicia sepium L.

Lathyrus pratensis L., and **L. macrorhizus** Wimm.

Prunus spinosa L.

Prunus domestica L. Three trees in copse by Yore above Appersett Bridge (F. A. Lees).

Prunus Avium L. Woodhall Scar Woods; planted?

Prunus Padus L.

Spiræa Ulmaria L.

Agrimonia Eupatoria L.

Agrimonia odorata Müll. On Penhill above West Burton; and in Bishopdale, west of Thoraby. New to vice-county 65 of Watson's 'Top. Bot.'

Sanguisorba officinalis L.

Poterium Sanguisorba L.

Alchemilla arvensis Scop. Not common.

Alchemilla vulgaris L.

Potentilla Fragariastrum Ehrh.

[**Potentilla verna** L. Semerdale (Baker's 'North Yorkshire'): not seen by me].

[**Potentilla alpestris** Hall. fil. Main Limestone scars on Haslen Fell, Waldendale (Baker's 'North Yorkshire'): not seen by me].

Potentilla Tormentilla Schenk.

Potentilla reptans L. Ascends as far as Bainbridge.

Potentilla anserina L.

Comarum palustre L. In bogs at the foot of Addlebrough;
and south of Locker Tarn, Carperby.

Fragaria vesca L.

Rubus Idæus L. Up to 1,800 ft. in 'Swallow holes' on Ten
End.

Rubus Radula Weihe. Up to about Preston.

Rubus rhamnifolius W. & N. Ascends nearly 1,000 ft. on
Penhill.

Rubus discolor W. & N. Ascends the valley to Woodhall.

Rubus villicaulis W. & N. Hawbank Wood, near Carperby.

Rubus diversifolius Lindl. Up to 1,000 ft. in Fossdale.

Rubus corylifolius Sm. Up to below Mill Gill, Askrigg.

Rubus cæsius L.

Rubus saxatilis L. Descends to Freeholder's Wood, Carperby,
630 ft.

Rubus Chamæmorus L.

Geum urbanum L.

Geum intermedium Ehrh. In Cat Scar near Yore Mills; Bolton
Gill; and Cotterdale.

Geum rivale L.

Rosa spinosissima L. In the lower part of Freeholder's Wood,
Carperby; and in Bain Gill.

Rosa involuta Sm. Shaw Gill, Hardraw (F. A. Lees)!

Rosa mollissima Willd. and *b. cærulea*.

Rosa tomentosa Sm.

Rosa scabriuscula Sm. Freeholder's Wood, Carperby.

Rosa micrantha Sm. In Bearpark near the waterfalls (F. A.
Lees)!

Rosa lutetiana Leman.

Rosa sphærica Gren., and *R. dumalis* Bechst.

Rosa biserrata Merat, *R. urbica* Leman, and *R. frondosa* Stev.

Rosa arvatica Baker, *R. incana* Woods, and *R. obtusifolia* Desv.

Rosa andevagensis Bast., and *R. verticillacantha* Merat.

Rosa Kosinciana Bess., and *R. Reuteri* Godet.

Rosa subcristata Baker.

Rosa implexa Gren., and *R. coriifolia* Fries.

Rosa Watsoni Baker.

(The best localities for *Rosæ* are Freeholder's Wood, Carperby; and Bain Gill. Nearly all the above mentioned *canina* forms are found in the former place).

Cratægus Oxyacantha L.**Pyrus Aucuparia** Gaert., and **P. Malus** L.**Peplis Portula** L. By the river about Aysgarth Falls.**Epilobium angustifolium** L. Head of Gayledale; Ten End in 'Swallow holes,' 1,800 ft.; and in Mossdale.

b. brachycarpum Leight. On the Aysgarth side of the river above the falls in Bearpark.

Epilobium hirsutum L., and **E. parviflorum** Schreb.**Epilobium montanum** L., and **E. palustre** L.**Epilobium obscurum** Schreb. Hawes and Simonstone.**Circæa lutetiana** L.**Myriophyllum spicatum** L. In 'Strands' pasture, Carperby; and Locker Tarn, Carperby.**Myriophyllum alterniflorum** DC. Frequent in many places in the river and tributaries of the Yore. New to vice-county 65 of Watson's 'Top. Bot.'**Hippuris vulgaris** L. In 'Strands' pasture, Carperby; in Bishopdale Beck, above Thoraby; and Semerwater.**Callitriche stagnalis** Kütz.

b. platycarpa. Carperby Moor.

Callitriche hamulata Kütz. In brook near Hawes Railway Station (F. A. Lees)!**Ribes Grossularia** L.**Ribes alpinum** L. Indigenous; up Gayle Beck near Aisgill Force (F. A. Lees)!**Ribes rubrum** L., and *a. sativum*.

a. Smithianum. Widdale Gill (F. A. Lees)!

Ribes nigrum L. Occasional.**Sedum villosum** L. In moist place by the Muker roadside above Simonstone; [damp rocks, Ten End (Baker's 'North Yorkshire'); not seen by me]. High up Gayledale near the old Duerley ironstone shafts (Albert Crosfield and F. A. Lees; 1885).**Sedum album** L. *a. teretifolium.* Thoroughly naturalized in a small wood above Leyburn Shawl.**Sedum acre** L.

- Sedum rupestre** Huds. Naturalized in small wood above Leyburn Shawl, and on bridge at Newbiggin, near Askrigg.
- Saxifraga aizoides** L. On rocks about the Whitfield Gill Waterfall, Askrigg.
- Saxifraga tridactylites** L.
- Saxifraga granulata** L. In fields about Scarth Nick; Thornton Rust; Yorber Knott; and Burterset; up to 1,600 ft.
- Saxifraga hypnoides** L.
- Chrysosplenium oppositifolium** L.
- Chrysosplenium alternifolium** L. Rare. Near footpath across West Bolton Gill (Mr. W. Robinson)!; and at Hawes 'backwater.'
- Parnassia palustris** L.
- Sanicula europæa** L.
- Helosciadium nodiflorum** Koch. Rare. In brook near Leyburn; and below Thoresby Green.
- Bunium flexuosum** With.
- Pimpinella saxifraga** L.
- Sium angustifolium** L. Rare. In brook below Thoresby Green; and near Leyburn.
- Æthusa Cynapium** L. Weed in gardens at Hawes.
- Silaus pratensis** Bess.
- Meum Athamanticum** Jacq. Meadows in Mossdale (Mr. Brunton, about 1805); not seen by me, but found there in 1886 by F. A. Lees.
- Angelica sylvestris** L.
- Peucedanum Ostruthium** Koch. Occasional; near farm-houses.
- Pastinaca sativa** L. Shaw Cote Scar, Askrigg (F. A. Lees).
- Heracleum Sphondylium** L.
- Daucus Carota** L. In field 100-200 yards east of entrance to lowest Aysgarth Waterfalls; and on Shaw Cote Scar.
- Torilis Anthriscus** Gaert.
- Chærophylloides sylvestre** L., and **C. temulum** L.
- Myrrhis odorata** Scop.
- Scandix Pecten-Veneris** L. Rare. Between Carr End and Marsett (C.S.)!
- Conium maculatum** L. Not common. Near Thoraby; Preston; and Shaw Cote Scar.
- Hedera Helix** L.
- Adoxa Moschatellina** L.

Sambucus nigra L.

Sambucus Ebulus L. Small wood above Leyburn Shawl.

Viburnum Opulus L.

Lonicera Periclymenum L.

Galium cruciatum With., and *G. verum* L.

Galium Mollugo L. Ascends to Ellergate, Birk Rigg (1,000 ft.).

Galium saxatile L., and *G. sylvestre* Poll.

Galium palustre L.

c. Witheringii. Frequent.

Galium uliginosum L. Locker Tarn Marsh, Carperby (F. A. L.)!

Galium Aparine L.

Asperula odorata L.

Sherardia arvensis L. Ascends as far as Carperby.

Valeriana dioica L., and *V. officinalis* L.

Valerianella olitoria Moench. Rather rare. Preston; Carperby;
and Shaw Cote Scar.

Scabiosa succisa L., and *S. Columbaria* L.

Scabiosa arvensis L. Not common.

Carduus nutans L. Frequent in mountain pastures.

Carduus crispus L., *C. lanceolatus* L., and *C. palustris* L.

Carduus heterophyllus L. Abundant in several places by the
Yore and other streams throughout the district.

Carduus arvensis Curt.

Carlina vulgaris L.

Arctium minus Schkuhr.

Serratula tinctoria L. On the Carperby side of the river Yore
about Aysgarth Falls.

Centaurea nigra L.

Centaurea Scabiosa L. Ascends to Carperby.

Centaurea Cyanus L. Occasional; not permanent. In field
west of Carperby, in 1880.

Chrysanthemum Leucanthemum L.

Chrysanthemum segetum L. Not permanent; occasionally
introduced with corn.

Matricaria inodora L. Casual.

Anthemis Cotula L. Casual.

Achillea Millefolium L., and *A. Ptarmica* L.

Artemisia Absinthium L. Middleham Moor, above the Quarry
(Mr. W. Whitwell).

- Artemisia vulgaris** L. Waste ground near Bow Bridge (C.S.)!
- Filago germanica** L. Leyburn Flag Quarries.
- Gnaphalium uliginosum** L. Not common; in damp places about Hawes.
- Gnaphalium sylvaticum** L. Hawbank, Carperby; and pastures near river below Swinethwaite.
- Gnaphalium dioicum** L. In pastures above Hardraw; near Preston; and on hill near Locker Tarn, Carperby.
- Senecio vulgaris** L.
- Senecio erucifolius** L. Ascends to Freeholder's Wood, Carperby.
- Senecio Jacobæa** L., and **S. aquaticus** Huds.
- Bellis perennis** L.
- Solidago Virga-aurea** L.
- Tussilago Farfara** L.
- Petasites vulgaris** Desf.
- Eupatorium cannabinum** L. River-side in Freeholder's Wood, Carperby. By stream near Wensley Station (F. A. Lees).
- Lapsana communis** L.
- Hypochæris radicata** L.
- Leontodon hispidus** L.
- Leontodon autumnalis** L., and *b. pratensis*.
- Tragopogon pratensis** L. Ascends as far as Carperby.
b. minor. Ascends as far as Carperby.
- Taraxacum officinale** Wigg.
- Lactuca muralis** Fresen.
- Sonchus oleraceus** L., and **S. asper** Hoffm.
- Crepis virens** L.
- Crepis tectorum** L. Casual on railway-banks and by road-sides.
- Crepis succisæfolia** Tausch. Bushy places in Bain Gill, at the higher end.
- Crepis paludosus** Moench.
- Hieracium Pilosella** L., and **H. murorum** L.
- Hieracium Gibsoni** Backh. On scars about the foot of Penhill.
- Hieracium cæsium** Fr. VAR. **Smithii**. Sparingly on sandy shale rock in larch wood above Leyburn Shawl; and Gayle Beck; abundant about Jack Wood, Penhill.
- Hieracium vulgatum** Fr.
- Hieracium tridentatum** Fr. Near the Yore about Aysgarth Middle Falls; Fossdale; Bain and Mill Gills; and woods north of Semerwater.

Hieracium prenanthoides Vill. Single specimen gathered on Eastholme Bridge, 1884; abundant on banks of Yore near Cotterdale.

Hieracium corymbosum Fr. (*H. Eupatorium* Griseb.). With the preceding in plenty by Yore at Birk Rigg (F. A. Lees).

Hieracium crocatum Fr. Up Gayle Beck.

Hieracium boreale Fr. Common. Ascends to 1,100 ft. in Cotterdale.

Campanula latifolia L., and **C. rotundifolia** L.

Vaccinium Oxycoccus L. Locker Tarn, Carperby; Wether Fell; Ten End; and Thornton Rust Moor.

Vaccinium Vitis-idæa L., and **V. Myrtillus** L.

[**Vaccinium uliginosum** 'In a pasture called "Rough Earth," Mossdale Head, Mr. Brunton'; MS. Note in Joseph Woods' handwriting in Townsend's copy of Old Bot. Guide. Not seen by me].

Erica Tetralix L.

Erica cinerea L. On moor above Preston.

Calluna vulgaris Salisb.

Pyrola minor L. In Mill Gill and Whitfield Gill, Askrigg; Bolton Gill; and near Thoraby.

Fraxinus excelsior L.

Erythræa Centaurium Pers. Very rare. In pastures near Aysgarth Force; and below Swinethwaite.

Gentiana Amarella L. Ascends to 1,800 ft. on Ten End.

Gentiana campestris L. Rare. On Penhill above West Burton.

Menyanthes trifoliata L. Locker Tarn; Freeholder's Wood, Carperby; and Widdale.

Convolvulus arvensis L. Rare. Ascends to Carperby.

Convolvulus sepium L. Rare. Up the valley as far as Hawes.

Verbascum Thapsus L. Frequent in waste places in lower part of the dale.

Scrophularia aquatica L.

[**Scrophularia umbrosa** Dum. By the road-side near the Hawbank Lead Mines, Carperby (Baker's 'North Yorkshire'): not seen by me].

Scrophularia nodosa L.

Digitalis purpurea L. At an elevation of 1,800 ft. in 'Swallow holes' on Ten End.

Linaria Cymbalaria Mill. Naturalised on walls near Nappa Scar.

Linaria vulgaris Mill. 'Town's Field,' Carperby.

Linaria italica Angl. Auct. In larch wood above Leyburn Shawl; perhaps not native, as there are several introductions in the same wood.

Mimulus luteus L. Islets in river Yore below Hawes; and in 'Strands' Pasture, Carperby.

Veronica hederifolia L., and **V. polita** Fr.

Veronica agrestis L., **V. arvensis** L., and **V. serpyllifolia** L.

Veronica officinalis L., **V. Chamædrys** L., and **V. montana** L.

Veronica scutellata L. Not common. In Bearpark near the river; Locker Tarn; in bogs on moor above Carperby; and at Hawes Backwater.

Veronica Beccabunga L.

Euphrasia officinalis L., and **E. gracilis** Fr.

Bartsia Odontites Huds. with *a.* **verna.** and *b.* **serotina.**

Pedicularis palustris L.

Pedicularis sylvatica L.

Rhinanthus Crista-galli L.

Melampyrum pratense L. *c.* **montanum.** Pretty common throughout the valley. Specimens with white flowers among the heather on summit of Dod Fell, 2,000 ft. (F. A. Lees).

Melampyrum sylvaticum L. South-west bank of Whitfield Gill, at an elevation of 1,200 ft.

Lathræa squamaria L. In Mill Gill; and Leyburn Shawl Woods. Cotter Force (W. Whitwell).

Orobanche rubra Sm. On the Main Limestone scar of Leyburn Shawl as far as Preston; and on the same series of rocks above Carperby, over 1,200 ft.

[**Mentha sylvestris** L. Near Eastholme Bridge (Ward in Baker's 'North Yorkshire'); not seen by me.]

Mentha viridis L. By Gayle Beck.

Mentha piperita Huds. In Cotterdale; and at Carperby.

Mentha hirsuta L., **M. sativa** L., and **M. rubra** Sm.

Mentha arvensis L. Near Appersett Bridge, Hawes.

Thymus Serpyllum Fr.

Origanum vulgare L.

Calamintha Clinopodium Sp.

Nepeta Glechoma Benth.

Prunella vulgaris L.

- Stachys Betonica** Benth., and **S. sylvatica** L.
Galeopsis Tetrahit L. 'Town's field,' Carperby; and Leyburn.
Lamium purpureum L.
Lamium album L. Ascends to Bainbridge (about 750 ft.).
Ajuga reptans L.
Teucrium Scorodonia L.
Lithospermum officinale L. In Freeholder's Wood, Carperby,
 near the river.
Myosotis cæspitosa Schultz.
Myosotis palustris With. and *b. strigulosa*.
Myosotis repens Don., and **M. sylvatica** Ehrh.
Myosotis arvensis Hoffm., and **M. collina** Reich.
Pinguicula vulgaris L.
Utricularia minor L. In peat-bogs on moor north-west of
 Addlebrough (1,400 ft.).
Primula vulgaris Huds.
b. variabilis Goup.
Primula officinalis L.
Primula farinosa L. Abundant in many places in the valley,
 especially about Aysgarth Force; Locker Tarn; and Rabbit
 Warren, Carperby.
Trientalis europæa L. Widdale Carr plantation (F. A. Lees) !
Lysimachia vulgaris L. In boggy place near the river in the
 Freeholder's Wood, Carperby. A starved form with facies of
L. ciliata L.
Lysimachia nemorum L.
Anagallis arvensis L. Rare. Pasture near Aysgarth Force; and
 near river below Swinethwaite.
Armeria maritima Willd. Abundant about Woodhall Lead-
 mines.
[**Plantago maritima** L. Semerdale, at Carr End (Baker's
 'North Yorkshire'); not seen by me].
Plantago major L.
Plantago intermedia Gilib.
Plantago media L.
Plantago lanceolata L.
Littorella lacustris L. Rare; in small quantity at Locker Tarn,
 Carperby.
Chenopodium album L., and **C. Bonus-Henricus** L.

- Atriplex erecta* Huds. In waste places, not unfrequent.
Atriplex hastata L. Casual.
Rumex conglomeratus Murr.
Rumex nemorosus Schrad. *a. viridis*.
Rumex obtusifolius Auct., and *R. crispus* L.
Rumex aquaticus L. Near Appersett; in lane near Thornton Rust; and at Semerwater.
Rumex Acetosa L., and *R. Acetosella* L.
Polygonum Convolvulus L., and *P. aviculare* L.
Polygonum Hydropiper L. In 'backwater' at Hawes; and Semerwater.
Polygonum Persicaria L.
Polygonum amphibium L. *b. terrestre*.
Polygonum Bistorta L.
Polygonum viviparum L. In pastures about Whitfield Gill, Askrigg.
Empetrum nigrum L.
Euphorbia Helioscopia L., and *E. Peplus* L.
Mercurialis perennis L.
Parietaria diffusa Koch. On Bolton Castle.
Urtica dioica L., and *U. urens* L.
Ulmus suberosa Ehrh. Planted in various places.
Ulmus montana Sm.
Quercus Robur L., *a. pedunculata* and *b. sessiliflora*.
Fagus sylvatica L.
Corylus Avellana L.
Alnus glutinosa L.
Betula alba L., *a. verrucosa*, *b. glutinosa*, and *c. pubescens*.
Populus tremula L. By river west of Bearpark; in Hawbank Wood; and Skelgill.
Salix pentandra L., and *S. alba* L.
Salix purpurea L., and *S. viminalis* L.
Salix cinerea L., *b. aquatica*, and *c. oleifolia*.
Salix aurita L., and *S. caprea* L.
Salix phylicifolia 'Linn.' Frequent throughout the valley.
k. Borreriana.
Salix nigricans Sm. Gayledale.
Salix repens L. Locker Tarn, Carperby; and moor south-west of Addlebrough.

Juniperus communis L. Beldon Gill, Carperby Peat Moor; and on Grit's Moor above Carperby. It is interesting to notice that in the adjoining dale—Swaledale—this shrub is abundant, whereas in Wensleydale it only occurs in one or two places, and then only quite a few bushes. Yore bank near Askrigg Station (F. A. Lees).

Sparganium ramosum Huds. 'Strands' pasture, and by Ellerbeck, Carperby. Hawes Brook and Backwater (*not* *S. neglectum*) (F. A. Lees).

Arum maculatum L.

Lemna minor L. Rare.

Potamogeton natans L. (true). Common. New to vice-county 65 of Watson's 'Top. Bot.'

Potamogeton polygonifolius Pour. Locker Tarn and bogs near.

Potamogeton rufescens Schrad. Bog in 'Strands' pasture, Carperby, and in stream on Thornton Rust Moor, east of Addlebrough.

Potamogeton perfoliatus L.

Potamogeton crispus L., and var. **serratus** Huds.

Potamogeton pusillus L. In bog in 'Strands' pasture, Carperby.

Potamogeton pectinatus L. Semerwater.

Triglochin palustre L.

Alisma Plantago L.

Alisma natans L. South side of Semerwater (F. A. Lees, Herb. 1866).

Orchis pyramidalis L. Bearpark, near Carperby.

Orchis ustulata L. Common at Carperby.

Orchis mascula L.

Orchis incarnata L. Locker Tarn, Carperby, and higher parts of valley. New to vice-county 65 of Watson's 'Top. Bot.'

Orchis latifolia L. Birk Rigg; Locker Tarn; and Bearpark.

Orchis maculata L.

Gymnadenia conopsea Br.

Gymnadenia albida Rich. Many places in the upper part of the dale.

Habenaria viridis Br. In Bearpark, near Carperby.

Habenaria bifolia Br. Birk Rigg.

Habenaria chlorantha Bab. In meadows about Mill Gill, Askrigg; and in woods near Aysgarth Waterfalls. Common in the upper part of the dale (F. A. Lees).

Ophrys muscifera Huds. Near Aysgarth Force; and Hawbank Wood, Carperby.

Listera cordata Br. Carperby Peat Moor (Miss Todd!); and on moor about $1\frac{1}{2}$ miles above Hardraw, near the Swaledale Road; on moors south of Semerwater.

Listera ovata Br.

Neottia Nidus-avis Rich. Rare. In pasture by the river on the Thoresby Green side, opposite Eastholme.

Epipactis latifolia Auct. Near bed of stream in Bolton Gill, 200–300 yds. from the entrance at lower end of valley.

Iris Pseudacorus L. Near river in Bearpark; by the ditch at Throstle Nest near Carperby; and at Hawes Backwater.

Tamus communis L. Frequent. Ascends to Askrigg.

Paris quadrifolia L.

Gagea lutea Ker. Near Leyburn end of Shawl Wood (Mr. W. Horne!), and in woods near Eastholme, Aysgarth.

Scilla nutans Sm. Aysgarth.

Allium Scorodoprasum L. In 'Town's field,' Carperby.

Allium vineale L. 'Town's field,' Carperby; Upper Aysgarth Falls, in Bearpark; and on the west scar of Addlebrough, at an elevation of over 1,500 ft.

Allium oleraceum L. Freeholder's Wood, and near waterfalls in Bearpark. Stream-side in Bain Gill (F. A. Lees).

Allium ursinum L.

Narthecium ossifragum Huds.

Colchicum autumnale L. Pastures near Aysgarth Force; and meadows near river at Leyburn.

Luzula pilosa Willd., and **L. sylvatica** Beck.

Luzula campestris DC., and **L. multiflora** Koch.

Juncus conglomeratus L., and **J. effusus** L.

Juncus diffusus Hoppe. Between Bainbridge and Semerwater, near the footpath; and at east end of Semerwater.

Juncus glaucus Sibth., and **J. acutiflorus** Ehrh.

Juncus obtusiflorus Ehrh. Rabbit warren, Woodhall; and Locker Tarn, Carperby.

Juncus lamprocarpus Ehrh., and **J. supinus** Moench.

Juncus bufonius L., and **J. squarrosus** L.

Blysmus compressus Panz.

Heleocharis acicularis Sm. Muddy south and south-west side of Semerwater (F. A. Lees)!

Scirpus palustris L.

Scirpus pauciflorus Lightf. Carperby side of the river above lowest Aysgarth Falls; Locker Tarn; and Bain Gill.

Scirpus cæspitosus L., and **S. setaceus** L.

Eriophorum vaginatum L., and **E. angustifolium** Roth.

Eriophorum latifolium Hoppe. In bogs at foot of Addlebrough; and Locker Tarn, Carperby.

Carex dioica L., and **C. pulicaris** L.

Carex paniculata L. Rare. In bog at lower part of Hawbank Wood, Carperby, near the lead-mines; and below Askrigg.

Carex muricata L. West Burton, about waterfall; and Preston Scar.

Carex stellulata Good.

Carex curta Good. Head of Bolton Gill, and in boggy place on the moor above Simonstone; Birk Rigg.

Carex ovalis Good., and **C. acuta** L.

Carex vulgaris Fries. Peculiar forms of this occur at Locker Tarn; and in 'Strands' pasture, Carperby.

Carex glauca Scop., **C. pilulifera** L., and **C. præcox** Jacq.

Carex pallescens L., **C. panicea** L., and **C. sylvatica** Huds.

Carex binervis Sm., and **C. Hornschuchiana** Hoppe.

Carex flava L. *a. genuina* Towns.

b. lepidocarpa Tausch. Near Locker Tarn, Carperby. This was verified by Mr. Arthur Bennett.

c. minor Towns.

Carex hirta L., **C. paludosa** Good., and **C. ampullacea** Good.

Carex vesicaria L.

A hybrid—**vesicaria** × **ampullacea**—at Hawes Backwater.

Anthoxanthum odoratum L.

Digraphis arundinacea Trin.

Alopecurus geniculatus L., and **A. pratensis** L.

Phleum pratense L.

VAR. flavescens Moore. With yellow anthers on till-banks by the Yore at Thoresby, as low as 400 ft.

Sesleria cærulea Scop.

Agrostis canina L.

Agrostis alba L., and *b. stolonifera*.

Agrostis vulgaris With.

- Calamagrostis Epigejos** Roth. Spinney by Blackburn Sike just below Hawes, 750 ft. (F. A. Lees). An addition to Baker's 'North Yorkshire' for district vii, and an extension of its upward range.
- Phragmites communis** Trin. Locker Tarn, Carperby; and Semerwater.
- Aira cæspitosa** L., and **A. flexuosa** L.
- Aira caryophyllea** L. Leyburn Flag Quarries; Rail track, Askrigg Station.
- Aira præcox** L. Leyburn Flag Quarries; Rail track, Askrigg Station.
- Avena flavescens** L., and **A. pubescens** L.
- Avena pratensis** L., and **A. elatior** L.
- Holcus mollis** L., and **H. lanatus** L.
- Triodia decumbens** Beauv.
- Koeleria cristata** Pers.
- Molinia cærulea** Moench.
- Melica nutans** L., and **M. uniflora** Retz.
- Glyceria fluitans** Br.
- Glyceria plicata** Fr. Near Yore Mills, Aysgarth; and Widdale Gill.
- Sclerochloa rigida**, Link. In Bearpark near the falls; and Leyburn Flag Quarries.
- Poa annua** L., and **P. nemoralis** L.
- Poa pratensis** L., and **P. trivialis** L.
- Briza media** L.
- Cynosurus cristatus** L.
- Dactylis glomerata** L.
- Festuca sciuroides** Roth. Yore-side below Aysgarth Middle Waterfalls. Casual.
- Festuca ovina** L., with *b. tenuifolia*, and *c. glauca*.
- Festuca rubra** L., *a. duriuscula*.
- Festuca elatior** L., and **F. pratensis** Huds.
- Bromus giganteus** L.
- Bromus asper** Murr., *a. serotinus*.
- Bromus sterilis** L.
- Bromus secalinus** L. Casual. By Yore-side below the middle waterfalls at Aysgarth.
- Bromus commutatus** Schrad., and **B. mollis** L.

Brachypodium sylvaticum R. & S.

Triticum caninum Huds., and **T. repens** L.

Lolium perenne L.

Lolium italicum Br. Casual about the river at Yore Mills, Aysgarth.

Lolium temulentum L. By river-side at Aysgarth Waterfalls. Alien.

Nardus stricta L.

Pteris aquilina L.

Cryptogramme crispa Br. Grits moor above Carperby; and on the grit tumble above Simonstone.

Lomaria spicant Desv.

Asplenium Ruta-muraria L.

Asplenium Trichomanes L., and **A. viride** Huds.

Asplenium Adiantum-nigrum L. Not common. Flag rock at Leyburn; scar above Carperby; and on grit near Preston.

Athyrium Filix-fœmina Bernh.

Scolopendrium vulgare Sm. Ascending nearly 1,000 ft. on Penhill.

Cystopteris fragilis Bernh.

Aspidium aculeatum Sw., and *b. lobatum*.

Nephrodium Filix-mas Rich., and *c. Borreri*.

Nephrodium dilatatum Desv., and **N. Oreopteris** Desv.

Polypodium vulgare L.

Polypodium Phegopteris L., and **P. Dryopteris** L.

Polypodium calcareum Sm. Scar above Carperby (J.P.); and Gayle Beck (F. A. Lees)! New to vice-county 65 of Watson's 'Top. Bot.' Both these stations are at an elevation of about 1,200 ft.

Equisetum variegatum Schl. By the Bain side above Bainbridge, and at intervals in stony wet places by the Yore down to Aysgarth Lower Falls.

NOTE—HEPATICÆ.

Jubula hutchinsiae in Cumberland.—Among some Scale Mosses gathered at Lodore, Cumberland, in 1884, I have found a piece of *Jubula hutchinsiae* Dumort. and am not aware that it has been recorded before for the North of England. I have also gathered it at Tollymore Park and Rostrevor, co. Down. The distribution of this species is remarkable. It seems to be very local, growing for the most part near our western coasts in moist localities.—C. H. WADDELL, B.A., Kendal.

May 1888.

A NEW SHELL-BOOK.

The Shell-Collector's Handbook for the Field. By J. W. WILLIAMS, M.A., D.Sc., Editor of 'The Naturalists' Monthly.' London: Roper & Drowley, 29, Ludgate Hill, E.C. 1888. Small 8vo, 148 pages, interleaved.

The idea of this little book is an excellent one, as a handy manual for the pocket, with concise and tersely-worded descriptions—or rather diagnoses—is one calculated to conduce to the convenience of every working conchologist. Such a work from the pen of a conchologist of large experience—both in the field and in the study—would be of much value. We are afraid, however, after examination of the one before us, that in spite of the excellence of its plan, the manner of its execution requires much emendation before it can become the guide which field-conchologists require. Its inaccuracies are somewhat too numerous for the book to be considered satisfactory. For instance, the author describes two varieties of *Arion ater* thus:

V. bicolor (*V. Brock*) Moq.: Animal dark brown or blackish, sides yellowish or orange.

V. albolateralis (*Ashford*): Animal dark brown or blackish, with the sides white, and the foot-fringe orange; the two last colours being sharply defined from one another.

Here are various errors. By what principles of nomenclature one name is ascribed to *v. Brock* and the other to *Ashford* we do not know. The two descriptions read too much alike, and neither of them is accurate; when our author speaks of the two last colours being sharply defined from one another, the innocent reader naturally supposes this statement to refer to the white side and the yellow fringe, whereas in the true *albolateralis* the sharp contrast is between the *black* of the back and the *white* of the sides, and the colour of the fringe has nothing whatever to do with the specific character. The writer has seen examples with the fringe whitish as well as with it yellow. The descriptions ought to read thus:

V. bicolor Moq. Animal with the back brown and the sides yellow or orange, the two colours being sharply defined from each other.

V. albolateralis Roeb. Animal with the back black and the sides pure white, the two colours being sharply defined from each other.

We notice that in two instances at least our author gives forms twice over, *Arion bourguignati* figuring as a species on p. 87, and as a variety of *A. hortensis* on p. 86; and *Succinea virescens* as a species on p. 97 and also as var. *vitrea* (Moq.) on p. 96, and var. *vitrea* (Jeff.) on p. 97. The tenacity of errors is shown by the retention of the mythical *Arion flavus*. And why is *Limax* made a subgenus? Our author speaks of '*Amalia* (*Limax*) *gagates*,' and of '*Eulimax* (*Limax*) *lævis*,' and so throughout the genus. A glossary is given at the end, a full index at the beginning, and two chapters on anatomy are also given, followed by directions for collecting, and a conspectus of the classes, orders, families, and genera.—W.D.R.

COAL-DUST AND EXPLOSIONS IN COAL-MINES.

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AN explosion in a coal-mine, whatever the cause, is a sudden, and for a short time a continuous, demand for more space in certain or all passages of a mine. It must be borne in mind that space is, in mines, limited in all directions save one, viz, that towards the shafts. This demand for more space is consequent on the presence and propagation of such heat as will produce incandescence in certain materials present; for example, that developed in the firing of a shot or of a local accumulation of gas. The demand arises from expansion of the air already filling the passages, and wherever dust participates, from the generation of new gases by the act of combustion, which thus increases the pressure by making an addition through the conversion of what was solid, into a gas. When some or most of these thus-formed gases are themselves fiercely combustible, the character of the combustion is so intensified that it is called an explosion. Hence the varying nature of coal-mine explosions, and hence initial causes, at one time operative, are at another time inoperative, not from lack of cause, but from lack of proper material on which the cause can act. Hence too, frequently, not the whole mine, but certain passages only are invaded, because combustion can only go where inflammable material is found. The inflammable materials in coal-mines are, *first*, fire-damp, usually spoken of as gas, found, more or less, in all such mines; and *second*, coal-dust, found chiefly in dry mines, which are mostly the deep mines. This second must be in considerable quantities to become an effective agent. Now, these two materials do not ignite with equal ease or under precisely the same conditions. Gas fires much more readily than dust, and under different conditions. The conditions under which fire-damp can produce an explosion may be considered settled; not so those under which coal-dust may. Indeed, until lately the latter was not considered capable of producing an explosion, and there are still some who do not think it is, in spite of apparently irresistible facts. Yet the gas which is the cause of explosion in the one case, is the cause in the other too, for the main difference will be found to be one of time—of *past* and of *present* release of the same substance. The gas in the one case is already free, whilst it is

yet, in the other case, locked up in its coaly prisons, the dust particles. In the one case it has obtained its freedom from the unbroken seam by changes of atmospheric pressure and other causes than local heat, whilst in the other case combustion opens the prison doors at the moment when the coal-dust becomes coked. Gas is ready-made in the one case, and has to be made at the time in the other. The danger from the presence of the free gas is fully recognised; not so that of the gas imprisoned in the particles of coal-dust. The kinetic energy is feared and watched; the *potential* has been hitherto largely ignored or despised. To the latter the present inquiry is directed.

There are evidently two factors in the combustibility of the dust of coal-pits, viz., material and degree of fineness. These will be considered separately. The degree of fineness of the dust exercises both a direct and an indirect influence on that combustion which results in an explosion. Direct, in rendering ignition easier, by bringing a larger surface under the influence of the agent; indirect, in favouring what we may call the *saturation* of the air-current with inflammable material. The direct influence is in favouring the transmission of heat; the indirect, in favouring the dispersion of the particles both before and after being heated. This indirect influence is very important, and especially so far as the lighter material is concerned, for the finer it is, the slighter need the shock be that causes its primary displacement, thus loading the air-current with combustible material, and making that prolongation of flame possible, which alone, in the absence of fire-damp, can make an explosion possible.

As regards composition, ordinary coal-dust consists partly of coal, partly of dant, and partly of extraneous and incidental matters. The coal, however fine, retains its cubical character roughly, and so can be identified with tolerable certainty under the microscope. The dant demands a little more care and attention. Among the rough cubes are seen, in larger or smaller numbers, many needle-shaped bodies, varying much in size, but all forming oblongs or rhomboids, and also certain triangular and polygonal bodies of slight thickness. These find their origin in that substance variously known by miners as 'Dant,' 'Mother of coal,' and 'Mineral charcoal.' Dant is of a deep dull black to the naked eye, soft to the touch, and is that portion of the coal which soils the fingers when coal is handled. Its dulness disappears under the microscope, and its long splinters, often delicate as needles, render it easily recognised. A piece of charcoal is so like it in appearance and physical condition that the name 'Mineral charcoal' seems peculiarly appropriate. This 'Dant'

is found usually in very thin layers, but sometimes the layers are an inch thick. More rarely it appears in pockets of considerable size. The thin deposits are very numerous and come between the layers of bright coal in planes parallel to those of the stratification of the adjoining rocks. Its softness, abundance, and appearance along these planes makes it form a considerable percentage of all pit-dust, and especially of the more dangerous kinds. The readiness with which ordinary charcoal absorbs oxygen may be significant as regards this dant or mineral charcoal. The presence of spiral vessels and strings of cells, entire or fractured, clearly prove the vegetable origin. Pitted cells, uncommonly like those characteristic of conifers, are occasionally met with.

Ordinary pit-dust mainly consists of these two substances—coal and dant, varying widely in their ratios, and also of foreign matter, which varies over a far wider range. I have conducted many experiments with coal and dant, and they prove conclusively that dant ignites most readily, and that coal burns with most energy. The finer either of these ingredients is, the more easily does it ignite, and the more perfectly is the mass consumed before going out. Conduction of heat is rendered easy by minute subdivision. Thus, coal-dust, collected from the screens at the pit-mouth, will not take fire from a match, when piled in a little heap on a slab of wood ; it is comparatively coarse ; but when pounded in a mortar it will do so, and burns with much smoke. This dust consists mainly of coal, but there is an admixture of dant. Coal, carefully selected, so as to be as free from dant as possible, will burn in like manner, but only when crushed very fine. With dant, the degree of fineness is of less moment, since it lights readily whether roughly scraped from the coal by a knife or pounded fine in a mortar ; still, the ultimate combustion of the heap is perfect in proportion to the fineness.

The 'material' is the other factor, and remains yet to be considered. The microscope shows that it consists of coal, dant, shale, or other stone dust, and what may be called incidental matter, as brick-dust, whitening, lime-plates, animal and vegetable refuse, and the results of the wear and tear of the haulage and winning apparatus. We will consider these—first, separately ; and second, in the natural combinations in which they exist in coal-mines.

The incidental matter varies much, is mostly small in amount, and so far as this question is concerned, is of no importance, so may be briefly dismissed. Its influence, whatever it may be, is almost invariably deterrent. The shale and other stone-dust may, however, in some cases be found assisting explosions. Usually its amount is small, often very small, except in the bottom dust of return air-ways

or horse-roads, and in these latter cases it so acts as a deterrent, that such passages are rarely invaded by explosions. When this dust is mostly shale, it may be dangerous, for some oily shales have yielded much volatile matter. Thus, I have found some, on being roasted on an iron plate, to turn from grey to black, and fall in weight from *twenty* grains to *ten*, thus indicating as much as 50 per cent. of volatile matter.

Dust is found in pits (1st) on the floors of the road-ways, (2nd) on the upper faces of the roof timbers and on natural ledges, and lastly, on the vertical sides of the passages, the vertical props and faces of the roof timbers, and even on the *under* horizontal faces of such timbers. It facilitates the examination of pit-dust, to consider the dust of these three indicated localities separately, for they differ certainly much in constituents, especially in their proportions, in physical condition, and perhaps in chemical too. That found on the floors and lower parts of the sides has been called by Messrs. Atkinson ('Explosions in Coal-mines,' by W. N. & J. Atkinson, H.M.I. of Mines. Longmans, 1886) '*Bottom*' dust, and that on the upper faces of timbers and ledges '*Upper*' dust; that on the upper vertical faces and on the under side of roof timbers I propose to call '*Flocculent*' dust. It felts and hangs together with that peculiar ropy aspect seen in 'soot,' and hence has been so called by miners. As regards fineness, for example, Bottom dust is coarsest, Upper dust intermediate, and Flocculent dust the finest. My examination points to a similar conclusion as regards the percentage of dant.

Dant is present in all pit-dust—bottom, upper, and flocculent; in the former to a small extent, in the two latter to a very large extent. From the microscope I estimate its percentage to vary in bottom dust between nothing and 50 per cent.; in the upper and flocculent dust between 40 and 70 per cent, or even 80 in the latter.

Got as free from coal as possible, and piled in a little conical mound on a slab of wood, it takes fire most readily when an ordinary match is lighted and applied to it, burning steadily, with little smoke, but with a strong smell (a smell quite characteristic of coal-mines), through the entire heap, and with such energy that it scorches a deep pit in the wooden slab on which it is burned. Even on a marble slab it burns through the entire heap, giving the stone the appearance of having been wetted. This is very significant, when the high conductive power of the marble, compared with the wood, is considered. On being burned on an iron plate, it begins to glow before the iron plate is red, and burns on with a steady glow. The fumes it gives off will not ignite. The mass changes from its ordinary deep black to a pale fawn-coloured dust, and is reduced in weight from 20 to $2\frac{1}{2}$

grains. Burned in a retort, it gives off no gas at the nozzle capable of supporting flame, but is reduced in weight from 41 grains to $38\frac{1}{2}$. It leaves the retort as it entered it, a loose mass of dust. Dant once thoroughly dry is not readily wetted but the water runs off, as usually with very fine dust, in little spherules. It is much better wetted by a moist atmosphere than by a direct application of water, and hence in my letter to 'Nature' (12th Oct., 1886) I suggested that keeping the ventilating air-current saturated with aqueous vapour might be found the best practical means of rendering it innocuous.*

Dant clearly, therefore, is not itself dangerously explosive, yet is admirably fitted to act the part that tinder used to do when it handed on the spark from the flint and steel to the old-fashioned brimstone match. Doubtless, in mine explosions wholly or chiefly due to dust, this is the *tinder*, as the shot flame or other initial cause is the *spark*.

Coal supplies a considerable portion of upper and flocculent dust, and the great mass of 'bottom' dust, along intake haulage-ways, which are the usual tracks pursued by those explosions which we believe to be essentially 'dust explosions.'

When very fine, this coal-dust (got as pure as possible), piled in a small heap, as was the dant, can be lighted with some little trouble by a match, and burns at first somewhat fiercely and with considerable smoke, then with less smoke and less energy, for it goes out before consuming the entire heap, and only scorches the wooden slab to a small extent. On the limestone slab it goes out before reaching the bottom of the heap. Burned on an iron plate, it does not show a glow till the plate is red, and then burns with small scintillations. Its fumes take fire when a light is applied, and a pale blue flame, occasionally tipped white, flickers over the heap. Its ash is reddish-brown, and only weighs half a grain from 20 grains of dust. Burned in a retort it gives off at first much smoke, which will not light. Soon, however, the smoke lessens, and then it at once lights, and burns with a long bright flame, which dwindles down after awhile to a small pale blue flame, and very reluctantly goes out. On opening the retort, the dust comes out a solid core of compact whitish coke with a metallic lustre.

Such coal-dust is manifestly capable of producing an explosion. Under favourable conditions it can produce a considerable amount of ordinary illuminating coal-gas, whose presence will convert the

* I am glad to see that Mr. Stratton (late manager of Seaham Colliery) has made a preliminary trial of this method in a South Wales Colliery, with such success that he is, at special request, pursuing this plan, with the object of submitting a full report at the next meeting in this great coal-field (May 1887).

air-current into an explosive mixture. Therefore, adopting the former simile, as the dant is the *tinder*, so this is the *sulphur match*.

So far, *artificial* dusts have been considered; now we will deal with dust *natural* to deep dry pits. The dust in such pits is mainly produced within the pit itself, but some is brought (you may readily see it sparkle in the sunshine over the pit-mouth) by the intake air-current from the screens. As this does not differ in composition from that which has never left the pit, it need not be dealt with separately. It needs only to be mentioned that it is but the very finest particles that are thus borne back on the wings of the wind into the pit.

The dust produced within the pit itself is formed during the processes of hewing and hauling, especially the latter. The working face is troubled by no large amount, and it is entirely bottom dust. The haulage ways are the special homes of the dust. Here it exists in the greatest quantities and in all the varieties of bottom, upper, and flocculent. It is partly shaken out of the moving tubs, partly blown out by the strong ventilating current. It must be remembered that the force of this wind can only be appreciated by adding together the speed of the current and the rate of the haulage. That which is shaken out goes mainly to form bottom dust; only the finest particles getting lodged on roof timbers and natural ledges. That which is blown out goes much more largely to form upper and flocculent dust. The mechanical force necessary to render the coal very fine is greatly in excess of that needed to reduce the dant to the same degree of fineness; indeed, great force is necessary in the one case and a mere touch or jolt is sufficient in the other. This must be borne in mind when the relative amounts of coal and dant are compared in the solid coal and in the pit dust. The proportion of dant in the finest dust is very largely above that in ordinary coal.

Falls of stone, the making of refuge holes, and the natural wear of the floor, cause an admixture of stony matter, and the constant passage of horses and men, the carriage of timber, bricks, &c., introduce other extraneous and incidental matters; but all these latter are small in amount and do not materially affect the character of the dust in intake haulage-ways.

The dust in return airways is usually only bottom dust in all essentials, and here the effects of falls from roof and sides, and from the beating-up of the floor, are found at their maximum, so that the percentage of stone is usually in the ascendant. It is not, therefore, here that the dust is dangerous. The great danger here is gas, since the air in these returns has circulated through the mine. It is a most significant fact that in the great majority of late disastrous explosions, the track

pursued by the blast is not the return, but the intake air-ways; and yet there are those who will persist in attributing such explosions to gas, and not to the manifestly true cause—dust.

Nearly all dusts include yellowish, reddish, or purplish fragments, very often triangular in shape, and with more or less clearly marked conchoidal fractures. They are tolerably abundant—for example in the Herrington Maudlin Coal. If these coloured bodies originate in Lycopodian spores (and they certainly closely resemble those seen in the well-known spore coals of the Bradford 'Better bed' and Leicestershire 'Moirs') they may play an important part in the production of explosions, for the resinous nature of the spores of the *Selaginella selaginoides* of our northern hills is so well known that they were formerly used in theatres to produce artificial lightning. Recent German experiments have conclusively shown that some dusts are exceptionally dangerous, and in such these spores may play a by no means unimportant part.

The following conclusions seem to be warranted by the foregoing facts and experiments. All dusts are not alike dangerous. The most dangerous dust really is the *finest*, viz., the flocculent and upper, less because of its composition than on account of its fineness. This, therefore, should be watered rather than the bottom dust. Dant always enters largely into the composition of such dust, but the most dangerous contain a high percentage of exceedingly fine coal, and even other more combustible matters as Lycopodian fossil spores. The flint and steel of olden times finds its counterpart in modern coal-pits, in the shot-flame or other start-point of an explosion, as it finds in the dant of dry dusts a natural tinder to catch the spark and hand it on to the sulphur match—the coal dust.

Bottom dust, both from its coarseness and its very mixed character, is much less dangerous. All parts of the pit are not alike dangerous. The most dangerous parts of pits, as regards *dust explosions*, are the haulage-ways, and as regards *gas explosions*, the working face and the returns. This should be remembered in watering.

The formation and accumulation of dust may be largely checked by improved tubs or slower hauling, and by saturation of the intake air-current with aqueous vapour, which latter means too will render dust already formed innocuous and easy of removal.

NOTE—LEPIDOPTERA.

Nepticula serella.—This is the name under which Mr. Stainton describes the *Potentilla tormentilla* feeding insect taken by Mr. E. R. Banks at Ingleborough (see *Naturalist*, March 1888, p. 82), in the current (April) number of the 'Entomologists' Monthly Magazine,' at p. 260. —GEO. T. PORRITT, Huddersfield, April 6th, 1888.

May 1888.

THE VERTEBRATA OF SUTHERLAND.

A Vertebrate Fauna of Sutherland, Caithness, and West Cromarty. By John A. Harvie-Brown, F.R.S.E., F.Z.S., and T. E. Buckley, B.A., F.Z.S. Edinburgh: David Douglas. 8vo, xii + 344 pages, illustrated title-page, numerous plates, plain and coloured, and map.

Although its typographical errors are somewhat too numerous, the work before us is one of the most superbly got-up of its kind that we have seen. It is handsomely printed, tastefully bound, and most appropriately illustrated. There is not only an excellent map on paper tenacious enough to make it capable of being unfolded, and a couple of panoramic views of scenery on tracing-linen, but illustrations of scenery associated with bird-life, of birds, nests and eggs from local specimens, and two exquisite reproductions of monochrome sketches accompany the chapter on fishes.

The work itself is based upon the personal experience of its two well-known authors, and embodies also such information as they have been able to gather from other sources—including in particular the posthumous notes of Henry Osborne of Wick (of whom a brief memoir is given). The work includes the whole vertebrate fauna of the district, and the plan of giving a list of the whole British vertebrate fauna, and indicating those species which occur in the area dealt with, is here adopted. This plan has the manifest advantage of demonstrating the relationship of the smaller fauna to the larger one of which it is but a part—and of recalling to mind the directions in which further research should be prosecuted. The information is given separately for each county under each species, excepting only in cases where the species is expressly stated to be common in both. The information is very fully given, with details of occurrence, notices of the local names, and many interesting notes of all kinds. An interesting account of the nesting of the Snow Bunting at Coire nan t' sneadhaidh is accompanied by a view of the place, a coloured figure of the bird, and a list of the alpine plants growing near. Full attention is given to the bibliography of the subject, and no pains are spared by the authors to elucidate in the fullest manner every aspect of their subject, the physical aspect and the faunal position of their district, an elaborate account of their sources of information, and references are also made to the extinct species. We should like, however, to have seen a summary, numerical and otherwise, of the whole fauna as compared with that of Great Britain or of Scotland; and we note in the preface, that the work, 'unlike most local Faunas, 'lays aside to a great extent political boundaries, and is marked out 'by others, much more natural, such as watersheds. This, we think, 'is a "new departure," but one which we imagine will commend itself

'to the favourable notice of most naturalists.' For our own part we thoroughly appreciate the wisdom of this new departure, based as it is upon sound principles, although it is not perfectly clear to us that the authors have taken it. The work itself seems to deal with the counties as politically defined, each county being taken in successive paragraphs. Had we undertaken the compilation of this work we should not only have adopted the river-basin province of 'Sutherland' as marked out on the map, but we should have subdivided it into minor faunal areas with natural boundaries, and given successive paragraphs to each under the various species. The fullness of the information as actually given compensates however for whatever imperfection the work may exhibit under this head. Altogether the work is one which we cannot conceive of any Scottish vertebrate zoologist being without, and we note with pleasure from a slip at the end that the authors have a further work of the same kind in preparation, to deal with the 'Outer Hebrides,' a volume to which all who have seen the volume now before us will look forward with the keenest anticipation.—W.D.R.

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Wasp taken at Sheffield [on 29th Jan., a warm and sunny day; species not stated]. Sci. Goss., April 1887, p. 94.

THE BRITISH EXAMPLE OF BULWER'S PETREL.

At the Zoological Society on November 15th last, Prof. Newton exhibited the unique British specimen of Bulwer's Petrel (*Bulweria columbina*), remarking that some doubt having been expressed as to the occurrence of Bulwer's Petrel in this country, announced by Gould in his 'Birds of Europe' (1st of August, 1837), Mr. W. Eagle Clarke determined to investigate the facts; and his search for the specimen in question has been successful. Had it not been for his perseverance and that of Mr. James Carter, of Masham, the specimen would probably have been for ever lost sight of. Gould's statement was that the specimen having been found dead on the banks of the Ure, near Tanfield in Yorkshire, on the 8th of May, 1837, was brought to Captain Dalton, of Slenningford near Ripon, a gentleman who had succeeded to a collection of stuffed birds begun by his father, Colonel Dalton, who, curiously enough, sent Bewick the specimen of the Stormy Petrel (also found dead in that neighbourhood) figured and described in his 'British Birds' (ed. 1, ii, pp. 249-251). At the end of last May, Mr. W. E. Clarke applied to Mr. Carter, who found that the Dalton collection had been dispersed by sale just a week before. Fortunately all the cases of stuffed birds had been bought by persons living in Ripon; and having obtained their names from the auctioneer, Mr. Carter, after many failures and some loss of time, discovered in the possession of Mr. Jacobs, Head-master of the Choir-school in that city, the case and specimen labelled '*Procellaria bulwerii*,' which he had bought with others at the Dalton sale. Beyond this fact, however, there was no note or anything to identify the specimen with the object of the search. Mr. Carter thereupon undertook to inquire of the surviving members and connexions of the Dalton family, and, fortunately, one of the latter, Mr. George Clarke, Tanfield House, Bedale, a son-in-law of Captain Dalton, was found, who not only remembered the specimen perfectly well, having seen it 'scores of times,' but produced an old manuscript note he had made on the margin of a 'Bewick' (in which he had been accustomed to record ornithological observations), to the effect that this bird was 'found dead on the Bridge at Tanfield,' and had been given to his father-in-law, who had it 'preserved by the late John Stubbs of Ripon, fishing-tackle maker and bird-stuffer.' Mr. George Clarke also remembered the owner having several times refused the offer of twenty guineas for the specimen, and after his death had looked in vain for the specimen, which, it appears, had been put away in a lumber-room and wholly forgotten. There can, then, be no doubt that this is the very bird found dead at Tanfield. It is now the property of Mr. W. E. Clarke, whose intention it is that it shall be deposited in a Yorkshire museum.

Naturalist,

2 MAY 1888



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Evidences of Glacial Action near Ingleton.—ROBERT R. BALDERSTON.

Insect Migration at Heligoland.—EDM. DE SELYS-LONGCHAMPS; contributed by JOHN CORDEAUX.

The Ornithology of Skiddaw, Scawfell, and Helvellyn.—JOHN WATSON.

Notes on 'The Flora of West Yorkshire.'—A. CRAIG-CHRISTIE, F.L.S.

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BOOKS RECEIVED.

Journ. of New York Microscopical Society. Vol. iv, No. 2, April 1888. [The Society. Proceedings of Berwickshire Nat. Club for 1887, Vol. ii, No. 2. [The Society.

W. Harcourt Bath.—British Birds and their Nests and Eggs. 8vo., cloth.

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E. A. Butler.—Silkworms (Young Collector Series). 8vo, cloth. [Sonnenschein & Co.

Essex Naturalist, Vol ii, Nos. 3 and 4, March and April 1888. [Essex Field Club.

Revue Bryologique, 15^e Année, 1888, No. 3. [Mons. T. Husnot, Redacteur.

British Association Report for 1886 (Birmingham). [The Association.

Watson Bot. Exch. Club—Fourth Report, 1887-8. 8vo, 16 pages. [The Club.

Philadelphia Academy of Nat. Sciences, Proc., 1887, Part 3 (Sep.-Dec.). [Academy.

Plymouth Institution.—Annual Reports and Trans. Vol. 7 (in 3 parts, 1878-81),

Vol. 8 (in 3 parts, 1881-4), and Vol. 9 (in 3 parts, 1884-7). [The Institution.

Mittheilungen des Ornithologischen Vereines in Wien, xii Jahrg., Nr. 5, Mai 1888.

Psyche, a Journ. of Entom. Vol. v, No. 144, April 1888. [Camb. Ent. Club, U.S.

Science Gossip, No. 281, for May 1888. [Messrs. Chatto & Windus, Publishers.

The Wesley Naturalist, No. 15, for May 1888. [The Wesley Scientific Society.

The Young Naturalist, Part 101, for May 1888. [Mr. John E. Robson, Editor.

The Midland Naturalist, No. 125, for May 1888. [Birmingham Nat. Hist. Soc.

Nat. Hist. Journ., No. 103, May 15, 1888. [J. E. Clark & B.B. Le Tall, Editors.

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NOTES ON BOTANICAL NOMENCLATURE.

GIOVANNI BATTISTA DE-TONI,

Assistant of Botany in the University of Padua, and Co-Editor of 'Notarisia.'

IN No. 289 of the 25th volume of the Journal of Botany (edited by James Britten), I have, in collaboration with Dr. Pietro Voglino, given some examples of generic names which are common to plants and animals, and also seven instances of generic names which have a double employ in the vegetable kingdom, viz.:—

- { *Antennaria* Gaertn. (Compositæ, 1791).
- { *Antennaria* Link. (Fungi, 1809).
- { *Chauvinia* Bory. (Chlorophyceæ, 1828).
- { *Chauvinia* Steud. (Graminaceæ, 1854).
- { *Cryptodiscus* Corda (Discomyceteæ, 1838).
- { *Cryptodiscus* Schren. (Umbelliferæ, 1841).
- { *Cystophora* J. Ag. (Melanophyceæ, 1841).
- { *Cystophora* Rabenh. (Hyphomyceteæ, 1844).
- { *Dictyopteris* Lamour. (Dictyotaceæ, 1809 = *Halyseris* Targ. Tozz.).
- { *Dictyopteris* Presl. (Filicaceæ, 1836).
- { *Helicophyllum* Brid. (Hepaticæ, 1827).
- { *Helicophyllum* Schott. (Aroideæ, 1856).
- { *Leptotrichum* Corda (Hyphomyceteæ, 1842).
- { *Leptotrichum* Hampe (Musci, 1847).

I now offer another slight contribution, in the hope that the newer duplicated names may be (in works of a general nature and in monographs) changed in the manner indicated by me in the article mentioned above, so that the confusion may be removed.

Acanthococcus Hook. & Harv. (1845), *Cryptogamic Botany of the Antarctic Voyage*, p. 131, t. 181. Ch. Flahault in Bull. Soc. Botan. de France (1886), *Revue Bibliographique*, D, p. 157 (Florideæ). **Acanthococcus** Lagerh. (1883), *Bidrag till Sver. Alg.-flora*, p. 61 (= *Glochiococcus* De-Toni) (Chlorophyceæ).

Appendicularia DC. (1828), *Prodr.* iii, p. 114 (Melastomaceæ). **Appendicularia** Peck (1886), in xxxviii Report Stat. Mus., p. 96. Berlese & Voglino, *Additam. Sacc. Syll. Fungorum*, i-iv, p. 354 (Sphæropsideæ).

- Contarinia** Zanard. (1843), Saggio di classificazione naturale delle ficee, p. 15. De Toni e Levi in Notarisia, 1887, No. 6, p. xxiv (Florideæ).
- Contarinia** Endl. & Dies. (1845), in Botan. Zeitung, 1845, p. 289 (Melanophyceæ).
- Crouania** J. Ag. (1842), Algæ maris Medit. & Adriat., p. 83. De Toni e Levi in Notarisia, 1886, No. 1, p. iv (Florideæ).
- Crouania** Fuck. (1869), Symbolæ mycologicæ, p. 320 (Discomyceteæ).
- Cymbella** Ag. (1830), Consp. crit. diat., i, p. 9 (Diatomaceæ).
- Cymbella** Patouill. (1886), in Revue mycologique, No. 29, p. 27. De Toni e Levi in Notarisia, 1887, No. 5, p. 291 (= *Chromocyphella* De Ton. et Levi nov. nomen) (Hymenomyceteæ).
- Diploderma** Link (1816) in Berl. Mag., vii, p. 40. De Toni, Syll. Lycoperd. in Saccardo Syll. Fung. omnium, vol. vii, p. 92 (Gasteromyceteæ).
- Diploderma** Kjellm. (1883). The Algæ of the Arctic Sea, p. 188 (Florideæ).
- ? **Empusa** Lindl. (1824), in Bot. Reg., x, No. 822, not., Cfr. Benth. & Hook., Gen. Plant., iii, p. 495 (Orchideæ).
- ? **Empusa** Cohn (1854), in xxxii Jahresb. Schles. Gesellsch. p. 43 (Entomophthoraceæ).
- Inoderma** Kütz. (1833), Alg. aq. dulc. German. dec., v, Nos. 39-40; Phyc. German., p. 150 (Chlorophyceæ).
- Inoderma** Berk. (1880), Australian Fungi, No. 285. De Toni, Syll. Lycoperd. in Saccardo Syll. Fung. omnium, vol. vii, p. 56 (= *Mesophellia* Berk. nomen anter.) (Gasteromyceteæ).
- Protoderma** Kütz. (1843), Phycologia generalis, p. 295 (Chlorophyceæ).
- Protoderma** Rostaf. (1875), Monogr. Sluzovce, p. 90. Cfr. Schroet, in Cohn Krypt. Flor. Schles., Pilze, p. 103. Berlese, Syll. Myxom. in Saccardo, Syll. Fung. omnium, vol. vii, p. 328 (= *Protodermium* nomen emend.) (Myxomyceteæ).

THE FLORA OF WENSLEYDALE: ADDITIONS AND CORRECTIONS.

JOHN PERCIVAL, B.A.

I FIND that there are several omissions from my paper on Wensleydale plants in *The Naturalist* for May; and I take the opportunity of making an obvious correction.

[Ceterach officinarum Willd. 'Wall in Mr. Willan's [wood] yard at Appersett, *Moore*' (Baker's North Yorkshire). Gone. Sought for without success by Wheldon about 1860, and by Lees 1884-6. The old wall still nourishes *Asplenium trichomanes* and *A. ruta-muraria* (F. A. Lees)].

Nephrodium dilatatum var. **alpina** Moore. In peat-holes on Dod Fell summit, at 2,100 ft. (A. Crosfield and F. A. Lees).

Ophioglossum vulgatum L.

Botrychium lunaria Sw. Common in the pastures throughout the dale.

Lycopodium selago L.

Lycopodium clavatum L. Grit-heathery summit of Wether Fell; and Lovely Seat (F. A. Lees).

Selaginella selaginoides Gray.

Equisetum arvense L., and **E. maximum** Lam.

Equisetum sylvaticum L., and **E. palustre** L.

Equisetum limosum L. In Locker Tarn, Carperby.

Nitella opaca Ag. In the Yore near Bear Park, Carperby; and in Bishopdale Beck near Thoraby.

Chara foetida Br.

Chara hispida L. In Locker Tarn, Carperby.

Chara aspera Willd. In pool near Yore Mills; and in the Yore near the Aysgarth ford.

Chara fragilis Desv. In the Yore at Hawes.

Chara contraria A. Br. In pool near Yore at Aysgarth Waterfalls.

ERRATUM.—In former list (p. 141), the VAR. **flavescens** Moore, of **Sesleria cærulea**, is misreferred to the preceding species (**Phleum**).

NOTES—ORNITHOLOGY.

Pied Flycatcher near Alford, Lincolnshire.—On the 27th April and the three following days a male Pied Flycatcher (*Muscicapa atricapilla* L.) was seen in and near the same garden where the one reported last year was noticed by me. This on the authority of Mr. Hargraves, the owner and occupier.—JAS. EARDLEY MASON, Alford, 3rd May, 1888.

Birds on Heligoland.—Mr. Cordeaux mentions eight resident or breeding species of birds on Heligoland, but he does not mention the Oyster-catcher (*Hematopus ostralegus*), eggs of which species, I was told by the proprietor of the restaurant on Sandy Island, he had found there; and also some Tern's eggs—no doubt the Common Tern, as, on walking to the end of the island where it terminates in a sandy promontary, we found a few hovering over the waves, which we thought might have eggs, but it is needless to say did not find any without a dog.—J. H. GURNEY, Junr., Keswick Hall, Norwich, May 1st, 1888.

Nightingale near Beverley.—Mr. Boyes writes me on the 24th inst. that they had a Nightingale (*Daulias luscinia*) at Beverley for a short time, but he fears it has either been caught or disturbed.—W. EAGLE CLARKE, May 26th, 1888.

NOTE—BOTANY.

Notes on the List of Ingleton Plants (Page 119).—Mr. Leach's list of a dozen plants said to have grown about Ingleton fifteen to twenty years ago contains the names of two which it is most unlikely (looking to their preferences as evidenced by their known distribution) ever grew thereabouts at all. That misnamed '*Asplenium germanicum*' was doubtless the alternate-pinnuled depauperate form of the Wall-Rue (*A. ruta-muraria*) into which it sports, though rarely; and, again, the '*Aspidium lonchitis*' of Kingsdale, was almost as certainly that very narrow, stiff-fronded, spinulose variety of *Aspidium aculeatum*, which (as its name *A. lonchitidioides* shows) has not only a likeness to the true 'Holly' fern, but has, in fact, been often mistaken and misrecorded for it before now.

Then, whatever is meant by the 'solitary clump of *Epilobium hirsutum*' in Kingsdale, on Gragreth side? The name belongs to the very common 'Codlins-and-Cream' which bedecks the sides of our water-courses in late summer, and cannot well be a printer's error. Probably the lovely wand-like red-spiked *Epilobium angustifolium* was meant—it grows nearer Ribbleshead, in the swallow-holes in a few places—but the name, at the least, reveals some faultiness in Mr. Leach's memory, and if an error in one name, why not in another!

Again, the Solomon's Seal of the 'Helks' is not '*Polygonatum multiflorum*,' but the indigenous *P. officinale*, known there since Gerarde's time (1597). It still occurs in the less accessible clefts.

And yet again, Mr. Leach not being 'aware of any other place in the North of England' where *Daphne mezereum* grows 'wild,' does not, happily, make it a fact. The Mezereon has been known as a denizen of rocky woods in West York since 1805, two localities, Feizor and Linn Gill near Ribbleshead being not a dozen miles from Ingleton. The 'Helks' has probably also nurtured odd and occasional plants, possibly truly wild, but more likely bird-sown, from an equally remote time. Birds are very fond of the seeds of the berries, which attract at a time when 'hips' and 'haws' are scarce, and they mostly get the berries in gardens (have done certainly for 200 years) to void them in the undergrowth where they roost. The rationale of the Mezereon's increasing frequency is thus explainable, but the whole question (like that of the original indigeneity of the Gooseberry and Wild Cherry, or the reverse) is full of difficulty.

Lastly, the Fly Orchis (*Ophrys muscifera*) has been known at Skirreth and Thornton Force since 1746 (Blackstone). Mr. John Willis found it up to 1873 to my knowledge. The locality given so vaguely as 'between Ingleton and Kirkby Lonsdale' for *Ceterach* is in Westmorland. Did Mr. Leach know this? It has been on record since 1860, Isaac Hindson the discoverer, I believe; but Richard Clapham reported the fern from Chapel-le-Dale in 1861. It is not at all unlikely that it yet lingers in sunny inaccessible spots on the scars. The remaining six montane plants named by Mr. Leach all grow about Ingleton still.—F. A. LEES.

Naturalist,

THE ORNITHOLOGY OF SKIDDAW, SCA FELL, AND HELVELLYN.

JOHN WATSON,

Fern Leigh, Kendal.

SKIDDAW (3,022 ft.), Sca Fell (3,160 ft.), and Helvellyn (3,055 ft.) are the three highest mountains in England proper. Each being in the same system, has, generally speaking, faunal and botanical species in common, the flora partaking of an alpine character, and containing many rare and fast-vanishing forms. Most of the birds are rare, whilst one or two species are almost peculiar to these mountains. One portion of Skiddaw consists of granite, but the great mass of the mountain, as well as its neighbours, is composed of a dark schistose stone. Sca Fell is composed of hard shaly slate, which structure applies also to Helvellyn, though a portion of it is made up of flinty porphyry.

I purpose here to set down some notes on the birds of these Lake District mountains, the information contained in which has been gleaned by actual observation, extending over many years. Living under canvas among the higher hills during many successive seasons has given opportunity of a peculiarly favourable kind for observation, and these opportunities have not been missed. So local is the distribution of species on the mountains under notice, that what applies to one generally holds good with regard to the other. When this is not so, special reference will be made to the fact. But little order can be observed with regard to the birds to be mentioned, though it may be well to begin with those that exist at the lowest elevation. In ascending from the cultivated belt which borders the valley, the first bird that appears is the Water-Ouzel (*Cinclus aquaticus*). Everywhere among the beds of the fell 'becks' it is common, and a few hundred yards higher up the stream, and where it becomes a torrent with numerous waterfalls, the white crescented form of the Ring-Ouzel (*Turdus torquatus*) is seen. This bird comes to the fells in spring, and is regular in making its appearance. For four consecutive years the arrival of a flock, generally numbering about a dozen, has been comprehended betwixt the 24th and 27th of March. For some days after their arrival, the only note heard is a harsh chatter. At the commencement of the second week the males sing freely, though mostly in the evening. During the early part of May I have heard five singing at one time, and all within the space of a mile and a half. It builds by the 'becks'—sometimes beneath the very

waterfalls themselves, in such cases being obliged to fly through the spray on entering and emerging from its nest. Although slugs and ground-beetles would seem to form its food on the mountains, it loves the scarlet-berried fruit of the rowan-tree when this is obtainable. The provincial names of the Ring-Ouzel are—Fell Thristle, Mountain Blackbird, and Mountain Crow.

Still ascending the boulder-strewn stream, a few pairs of Pied Wagtails (*Motacilla lugubris*) show themselves near the sheep-folds. Here they are breeding, and during the summer months, which embrace the times of gathering and washing the sheep, insect food is always abundant. Towards the end of August, the Pied Wagtails flock, prior to their departure.

But the bird essentially of these mountains—from the lowest shoulder to the topmost summit—is the Meadow-Pipit (*Anthus pratensis*). Here it is the tit-lark, titling, moss cheeper, and ling-bird. This 'mountain lint-white' ascends to 3,000 ft., and builds its nest among the scrub, and at a lower elevation among the heather. The height of its breeding-season is the first week of July, and its young are fed upon a species of small red spider, which abounds among the lichens on the mountains.

Ascending even to the cairn of Sca Fell, and nesting above the belt where the herbage ceases to grow, is everywhere seen the vanishing white form of the Wheatear (*Saxicola ænanthe*). This is another summer visitant to the mountains, returning with the trailing green fronds of the stag's-horn moss, and leaving again when nesting is over. Flitting and clacking, and then diving below, the white rumped fallow-chat causes a new light and a new interest in every lichened boulder. It has its nest and its pale-blue eggs in the grey stone walls, in a cleft of the rocks, or on the lee side of a stranded granitic block. On leaving the mountains in autumn, the Wheat-ears descend to the marshes, prior to taking their departure.

Only those can fully appreciate the meaning of the word 'tarn' who have seen these black mountain merelets lying silent and sad, from the hill tops. Their water appears black as ink, owing to the soft fringe of peat which encircles the marge. Such are Red Tarn, at the foot of Helvellyn; Burnmoor Tarn, by Sca Fell; Kepple Cove; Sprinkling and Grisedale Tarns—each of these has its pair of Summer Snipe (*Tringoides hypoleucos*). These, with tremulous wings, flit along among the peat and pebbles, and breed and find their food among the drift-stuff. Their wild whistle is peculiarly in keeping with the still solitudes of the mountains, and only serves to make the silence more intense. In addition to this whistle, the Summer Snipe has a continuous and lively song, and upon its first arrival in spring

is quite loquacious. Like the last-named, the Sandpiper makes for the low-lying Cumberland marshes ere starting on its return migration. The downy young one figured by Yarrell, was sent by T. C. Heysham, of Carlisle, and was probably from the neighbourhood of these mountains.

During its spring and summer migrations, the Osprey (*Pandion haliaetus*) is fond of resting for a time by the still mountain tarns ; and scarcely a year passes but that one or more of these birds may be seen fishing for the trout that abound in most of the meres. When the fish are seen swimming near the surface, the Osprey dashes down into the water, raising a jet of spray, and usually ascends with a fish in its talons. This is firmly held by the wondrously-adapted feet, and is eaten at some little distance among the rocks. At the end of last century the Osprey bred in the Lake District, and notably in Whinfield Park.

Before the invasion of tourists and the action of the shepherds ridded us of the Golden and White-tailed Eagles (*Aquila chrysaetus* and *Haliaetus albicilla*), the former, as Wordsworth tells us, used to wheel and hover round the head of the solitary angler as he plied his silent trade in Red Tarn. Certainly at one time eagles bred commonly—at least, as commonly as the larger birds of prey in any one district ever do—in these mountains and their environments.

Upon the shoulders of the mountains a few pairs of Merlins (*Falco aesalon*) nest annually, preying for the most part on larks, pipits, wheatears, and young ouzels in autumn. These little falcons, the arabs of the air of these wilds, hunt in consort and maraud through the whole district. In summer their bright red eggs are laid in a depression among the heather, and near the nest are usually found the remains of various mountain birds. To see a pair of wild Merlins lark-hawking here, where nothing obstructs the view, is one of the most fascinating sights in nature. It often happens that chasers and chased, circling against the sky, rise higher and higher until they become mere specks in the cloud-caps that overtop the mountains. To see this falconer's favourite, too, rush past on the wings of a mountain storm, as we have often done, is a sight not soon to be forgotten.

A bird which constitutes a considerable part of the Merlin's prey is the Twite, or Mountain Linnet (*Linota flavirostris*). This is a species characteristic of the Fells, resembling a linnet, but having a long forked tail. Its bent-built nest is found on broken heathery or peaty ground, and always in elevated situations. On Helvellyn, Sca Fell, and Skiddaw it commonly breeds, descending to the lowlands at the approach of winter. This species is another of the 'ling birds'

of the fell folk. It is one which is gradually diminishing in the north, for whilst it was once not uncommon and widely distributed, it is now both rare and local in its distribution.

There is no sufficient cover on any of the higher mountains for Black Game; but the indigenous Red Grouse (*Lagopus scoticus*) is sparsely scattered up to above 2,500 feet, at which height the peat suddenly ceases. These birds are somewhat less in size and more hardy than those on the lowland moors. They rarely have more than six or seven young, and generally four or five. This is probably owing to the severe climatic conditions with which they have to contend; their spring and summer at this altitude being only of about four months' duration. The coveys are late hatched, and the birds lie closely, but disease is almost wholly unknown. Pied varieties of the red grouse, and others almost white, occur commonly among the Lake hills. The Ptarmigan is not found on any of these mountains, although the experiment of establishing them on Skiddaw was tried, and failed.

It is probable that the number of grouse found on the higher ranges may be very much kept in check by the great number of Carrion-Crows (*Corvus corone*) which everywhere exist among the fells. These impale the eggs of the Red Grouse upon their bills and carry them away to eat at leisure. Under some wall or rock great numbers of egg-shells may often be found, testifying to the havoc which these sable marauders commit. This bird is one of the features of the fell fauna, and is well known to the dalesmen and shepherds, who give it a bad character. In spite of much persecution, however, it is still a common resident, keeping to the sheep-walks in search of food, and breeding among the mountains. Although a great carrion feeder, it will kill weak and ailing lambs, picking out the eyes and tongues of these when they are reduced to a helpless condition. They are resident birds, and only the snows of winter drive them to the lowlands in search of food.

The Hooded Crow (*Corvus cornix*) only comes as an occasional visitant, though sometimes hybrids between it and the Carrion-Crow are shot among the hills.

Once only, as we were passing a wild ghyll at the head of Eskdale, a pair of Missel-Thrushes (*Turdus viscivorus*) flew high above, and straight across the mountain. This was somewhat remarkable, as the storm-cock is rarely seen on the highest mountains themselves, in spite of 'Mountain-throstle' being one of its Cumbrian names.

After the snows of last year (1886), the fell sheep of the higher runs perished by hundreds, and the farmers (four in number) of the

farms lying contiguous to Sca Fell alone lost 1,500 sheep out of a total of 6,000. The Peregrines (*Falco peregrinus*) and Ravens (*Corvus corax*) which find an asylum in the recesses of the mountains are the only creatures which benefit by the great loss. In winter a few Snow Buntings (*Plectrophanes nivalis*) appear on the mountains, but never long to remain; they soon pass on to the lower feeding-grounds. Bean and other Geese occasionally stay for a time on some of the tarns already mentioned, but this is only en route.

Either upon the Lake mountains or elsewhere the Dotterel (*Eudromias morinellus*) was probably never common, nor even fairly plentiful. The small flocks which come in May are called 'trips,' and immediately upon reaching the coast they strike inland, follow the backbone of the country, and are brought up by the mountains of Westmorland and Cumberland. Here, upon the spurs of the highest mountains, and among the mists, they nest. Hewitson spent many annual vacations searching for a breeding site, but never found one. Five or six pairs frequently breed at no great distance from each other, but make not the slightest attempt at building a nest. They are exceedingly tame, and if frightened from the nest run only to a short distance. The Dotterel rarely lays more than three eggs. Its call is a low plaintive whistle, which cannot be heard at any great distance, and this it often utters when alarmed. The sitting bird will return to its nest even whilst an eye-witness is near; or, if the nest be undiscovered, the bird may be seen quietly watching the intruder. In the past this has been a most persecuted species owing to the great value of its feathers for fishing. Both miners and shepherds sought out its breeding haunts, and, on account of its tameness, often destroyed great quantities. Some of the latter even trained dogs to find the nests, and in this they were most successful. From this and various causes the bird has become exceedingly scarce, until now it is one of our rarest British plovers. Last season it bred sparsely on Helvellyn, Grassmoor, and Sca Fell. Here the old and young birds stay through summer, but in autumn commence their autumnal migration. It may be mentioned that out of eleven nests found by an old friend, two were in the last week in May, the remaining nine in June; the May nests contained one and three eggs respectively.

The Golden Plover (*Charadrius pluvialis*) is a beautiful mountain-bird, spending its summer among the hills, and retreating to the mosses and marshes at the approach of winter. Here it lives gregariously, mixing with various sand- and shore-haunting birds. One of the most remarkable traits in the bird's economy is that of changing its plumage in the breeding season. The breast—a dull

greyish white—now becomes black, which, set off against the gold of the back, renders this Plover a handsome species. As we stood amid the nesting colony, and the birds ran or wheeled, plaintively piping, round our heads, it was not inappropriately remarked that they looked as though in evening dress, only with the colours reversed. The breeding station referred to was covered with thick tussocky grass, with here and there bog holes, containing abundance of water. In some cases the young were hatched, the shells being left in the nest.

Of the larger birds of prey, the Buzzard (*Buteo vulgaris*) is the most common among the hills. Often upon the mountains it sits upon some commanding crag and remains motionless for hours. Probably at this time it is digesting the prey which it has secured during the hours of hunting. This must sometimes amount to a vast bulk, for it is said that sixty mice have been taken from the crop of a single bird. It feeds upon moles, beetles, and field-mice, but rarely destroys birds and then only slow-flying ones. Grouse which are weakly or ailing, it picks out, and in this way does much towards stamping out disease. The shepherds destroy many Buzzards in winter, taking them in fox-traps, set near a dead Herdwick, and buried beneath the heather. When the buzzards are foraging for food they fly low over the ground, and systematically work the valleys of their neighbourhood. They are such omnivorous feeders that they always seem to have abundance of food. At the same time we would remark that among the hills they feed much more frequently upon carrion than birds of the same species which live in the valleys. No less than seventeen Buzzards were taken by the shepherds upon one allotment in the manner indicated above. On a cloudless summer day it is beautiful to see these birds circling high in the air, until they become as but specks against the blue. Sometimes half-a-dozen birds may be seen indulging at the same time in these gyrations, which have evidently no other object than pleasure. Although naturalists have described the Buzzard as building in trees, this is not the case with the birds of the Lake District, as in every instance that has come under my personal notice the nests have been built among the rocks and crags. These are composed of sticks, twigs of heather, bents, and are lined with wool. The eggs, however, are as variable as the plumage of the birds themselves, which is saying much. Cream-coloured specimens are not at all uncommon, these being for the most part birds of the year. At the farm-houses of the dalesmen and yeomen lying contiguous to the mountains named, one of the orthodox ornaments is a case of 'stuffed' birds. In these the Common Buzzard is generally the most conspicuous,

and in examining the cases referred to we have discovered four Rough-legged Buzzards (*Archibuteo lagopus*). The Common Buzzard is an early breeder, and not unfrequently two broods are produced in a season. An authentic anecdote anent this species may be worth reproducing. William Pearson, a friend of Wordsworth's, was a close observer of the birds of his valley. When a lad, he was in the habit of setting 'gins' for Woodcock, and one morning, on going to examine his snares, he discovered a Buzzard near one which was struck. The bird attempted to escape, but being evidently held fast, could not. A Woodcock had been taken in one of the snares, which, whilst fluttering, had been seen and attacked by the Buzzard. Not content, however, with the body of the Woodcock, it had swallowed a leg also, around which the noose was drawn, and the limb was so securely lodged in its stomach that no force that the bird could exert was sufficient to withdraw it.

The Cormorants (*Phalacrocorax carbo*) come to the tarns, especially Crummock Water, but are most difficult to approach. They either spend their time in fishing, at which they are great adepts, or sit solitary upon a huge black rock which just rises above the water. Sometimes in autumn a small flock will make its appearance, when, from the white breasts of the birds, it will be seen that the majority are those of the year. More rarely, but in company with the last-named species, a few Shags or Green Cormorants (*Ph. graculus*) will make their appearance.

When the weather is rough, the Black-headed and Lesser Black-backed Gulls (*Larus ridibundus* and *L. fuscus*) seem to find food on the edges of the elevated mountain merelets, and daily in late summer and autumn visit the tarns. On wild and stormy nights the Curlews (*Numenius arquata*), attracted by the lights of our bell-tent, flew and screamed in the darkness. These breed upon the plashy shoulders of the mountains, and in autumn make off to the low-lying mosses and estuaries. Whilst camping, and when we emerged from the flaps of the canvas, it was sometimes seen that a great many birds were around, and our lights certainly had the effect of keeping the 'ling-birds' cheeping all night. And we noticed that this continued when the short sharp bark of a fox was coming from out the crags.

The bird essentially of the mountains, however, is the Peregrine (*Falco peregrinus*). Since the Eagles have become extinct, this is our noblest bird of prey. It still nests high in the beetling crags, and its nest is most difficult of access. It marauds and plunders the whole district. The gulls and summer snipe of the tarns afford it food, as do also moor-game, ducks, and wood pigeons. We have seen

the female Peregrine fly with a Rock-Dove in its talons without its flight being impeded in the least. But the Rock-Dove is a strong flyer, and the Falcon Crag Peregrines we saw strike thrice, ascending betwixt each, before pulling down their plucky game. There can be no doubt that Peregrines are very destructive to grouse; but it is just as true that they pick off the slowest and weakest birds. When food is scarce on the mountains, they descend into the valleys, and here they obtain leverets and partridges, as well as the larger non-game birds. During the past season two pairs of Peregrines bred in the immediate vicinity of Sca Fell, one of which was not at all difficult to come at. In another locality, where there has been an eyrie time out of mind, we found the Raven and Peregrine building within about thirty feet of each other, and both had eggs as early as the last week in March. This bird, with its swift-whirring wings, bringing death and devastation, is in keeping with the spirit of the mountains. But, like all the rarer birds of prey, it is fast becoming extinct. In a few years it, too, will have passed from the mountains and from our fast-diminishing fauna.

The Hobby (*Falco subbuteo*) is the rarest of the Falcons, and only birds occur at long intervals, when on their autumnal migration.

Not unfrequently in autumn and during rough weather, the Storm Petrel (*Procellaria pelagica*) is picked up dead or exhausted among the hills. So many examples of these interesting little birds have occurred in this way that the fact may be worth recording.

It may be well to give the provincial names used in the Lake District for those species already named:—

Dipper—Water Crow, Bessy, Bessy Douker, Water-Ouzel.

Ring-Ouzel—Mountain Blackbird, Fell Throstle, Ring Blackbird, Rock-Ouzel.

Pied Wagtail—Water Wagtail, Wattie Willie, Willie Wagtail.

Meadow Pipit—Lingbird, Titlark, Titling, Moss-cheeper, Lintwhite, Heather Lintie, Moor Titling, Field Titling, Meadow Lark.

Wheatear—Stonechat, Fallowchat, White-rump, Chackbird.

Common Sandpiper—Summer Snipe, Willy Wicket, Sand Snipe, Sand Lark.

Osprey—Eagle Fisher, Fishing Eagle, Grey Eagle, Silver Eagle, Fish Hawk, Bald Buzzard.

Merlin—Blue Hawk, Small Blue Hawk, Stone Hawk.

White-tailed Eagle—Cinereous Eagle, Erne, Arn, Sea Eagle.

Twite—Lingbird, Heather Lintie, Forktail, Mountain Linnet.

Black Grouse—Black Game, Black Cock, Grey Hen.

Red Grouse—Moor Game, Moorbird, Moor-fowl.

Carrion Crow—Corbie Crow, Dope, Doup, Ket Crow, Cobier, Black Neb.

Hooded Crow—Norway Crow, Grey Crow, Grey-backed Crow.

Missel Thrush—Churr Cock, Storm Cock, Mountain Thristle, Screech Thrush, Shrite.

Snow Bunting—Snow-flake, Snow-fowl, Snow-bird, Pied Finch, Fell Sparrow, Mountain Bunting.

Bean Goose—Grey Lag, Wild Goose.

Dotterel—Mountain Plover, Foolish Dotterel.

Golden Plover—Grey Plover, Whistling Plover, Yellow Plover.

Buzzard—Buzzard-hawk, Shreak, Bustard, Puttock, Gled.

Cormorant—Scart, Black Cormorant, Black Diver, Elder.

Black-headed Gull—Sea Mew, Black-head, Red-legged Gull.

Lesser Black-backed Gull—Black-back (fisher-folk).

Curlew—Whaup, Jack Curlew.

Peregrine—Big Blue Hawk, Falcon.

Storm Petrel—Sea-Swallow, Mother Carey's Chicken.

BOTANY FOR CHILDREN.

Flower-Land: an introduction to Botany for Children, and for the use of Parents and Teachers. By ROBERT FISHER, M.A. (Vicar of Sewerby). Cr. 8vo, boards, pp. 62. Heywood: Manchester and London. 1887.

The aim of this little work is as simple as its method of treatment, recalling to one's mind Browning's dictum—

That low man goes on adding one to one—
His hundred's soon hit,

but so far as it goes—it is verily the alphabet of botanology—we have nothing but praise to accord to it. As a sample of the happy way in which 'the little ones' are to be led into the decoys of cotyledonous terminology, we cannot do better than cite from the Ruskinian paragraph with which the author opens: 'I am,' he says to the children, 'going to write you a little book, which I hope will help you. Perhaps you will be disappointed when I tell you that there will not be any pictures in it. *But you are to find the pictures for yourself.* This will be much the best plan, for first, you will have all the fun of looking for them, and then *when you have found them*, they will be better than any pictures *you have ever seen.*' This is delightful, and there are more naive remarks with the same quaint simplicity about them. Those anent unbelled blooms—the hollow-stemmed Kex, the Earth-nut, etc.—are especially good, but surely all youngsters know the Angelica 'Kex,' the thick, pink, hollow juicy stem of which furnishes the tube for the rustic's first *whistle*. Most country-bred children, too, have dug for pig-nuts and eaten their farinaceous root-knobs (they are not 'bulbs'—vide p. 49—by-the-bye alluded to by Geo. Eliot alone among the poets, in her 'Brother and Sister'—

Here were earth-nuts found
And here the Lady-fingers in deep shade.

The little book is well printed in clear type, but we nowhere see its price stated.—L.

NOTE—ORNITHOLOGY.

White Stork near Scarborough.—Mr. Frederick Boyes writes me on the 24th inst. that a White Stork (*Ciconia alba*) was picked up recently near Scarborough.—W. EAGLE CLARKE, May 26th, 1888.

June 1888.

IRRUPTION OF PALLAS' SAND-GROUSE.

W. EAGLE CLARKE, F.L.S.,

Senior Assistant in the Museum of Science and Art, Edinburgh.

ONCE more—after an interval of a quarter of a century—Europe and the British Isles are the scene of an irruption of Pallas' Sand-Grouse (*Syrrhaptes paradoxus* Pall.), large flocks of which, leaving their home in the Steppes of Central Asia, have been making their way westward during the past month or two. On the 21st of April they appeared in various localities in Poland; on the 27th they reached Saxony; on the 5th of May they were seen in the Island of Rügen, and on the 7th in Holstein.

They reached England about ten days later. On the 17th of May a specimen was brought in the flesh to me at the Leeds Museum, which was said to have been shot in Dewsbury Road, Leeds. On the 18th, Mr. Philip W. Lawton saw five at Spurn, and the same day (as Mr. Lawton informs me) a man at Patrington saw a party of about a score. Since then Mr. Lawton has had numerous examples brought to him for preserving. On the 19th Mr. Donkin saw a party of twenty in a field adjoining the Ardsley reservoir, near Leeds. On the 20th large flocks—as reported in the newspapers—were seen in Oxfordshire, and at Hoddesdon, in Hertfordshire; and others—the date of which I have not seen noted—were reported from Clifton, Nottinghamshire. On the 24th Mr. Thos. Bunker wrote me that one had been captured alive near Goole, and on the same date Mr. Frederick Boyes, of Beverley, wrote me that about fifty or sixty had been seen at Flamborough, and that Mr. Harper, of Scarborough, had called to tell him that he had seen about thirty at Spurn. In a note in *The Field* of May 26th, Mr. Boyes remarked that these birds appeared on the East Coast of Yorkshire on the anniversary of the day on which they were first observed a quarter of a century ago, and that a flock seen on the 20th, at an East Yorkshire locality, the name of which he does not give, contained at least a dozen birds. In the same note he states further, that a friend saw about thirty at Spurn, on the 25th of the month. On the 24th one was telegraphed on the Boroughbridge Road near Norton-le-Clay, and eight others are said to have been seen in the neighbourhood.

As it is desirable that an ample record should be kept of this most noteworthy and interesting ornithological event, I hope all readers who have it in their power will communicate to this journal full details and particulars of such occurrences in Northumberland, Durham, Yorkshire, Lincolnshire, Nottinghamshire (including the details of the Clifton instance), Derbyshire, Cheshire, Lancashire, Westmorland, Cumberland, and the Isle of Man, as may come within their observation.

THE YORKSHIRE NATURALISTS' UNION IN LOWER WENSLEYDALE.

IN brilliantly fine and sunny—not to say hot—weather, the Yorkshire Naturalists' Union opened their excursion season of 1888 on Whit-Monday, the 21st of May, when they visited Leyburn, for the examination of so much of the picturesque northern escarpments of Wensleydale as lay between Bolton Castle and Leyburn. Only one line of route was planned out, and all the members, amounting to about eighty in number, assembled at Redmire Station about mid-day, some having been in the district over the week-end. The party was in charge of Messrs. Wm. Horne, F.G.S., Arthure (President of the Leyburn Society), J. A. Rodwell (manager of the Keldheads Mines), and Edward Chapman, of Carperby (from whose pen emanated the list of Wensleydale birds published in *The Naturalist* for June 1886). The party first made their way to Bolton Castle, and there examined the little museum of ethnological and archæological objects formed by the Hon. W. T. Orde-Powlett. The route was then taken by the main body for Redmire Scars, a few ornithologists making their way to Locker Tarn above Carperby, and the conchologists pushing on direct for Scarth Nick, where they were rejoined by the main body. The Keldheads Mines were then inspected, and then the whole party worked their way along the Shawl to Leyburn. Permission had been most kindly granted by Lord Bolton for members to visit his estates.

Arrived at Leyburn, a substantial tea was provided at the Golden Lion Hotel, and the sectional and general meetings were held at the Public Hall, for the use of which the Union were indebted to the local Society. The general meeting was held ten minutes before the announced time, most of the members being present, and as there was a wide-spread desire to be out in the fine evening, the business was curtailed. In the absence of the president and of all the vice-presidents, Prof. A. H. Green, M.A., F.R.S., of Leeds, Chairman of the Yorkshire Boulder Committee, was voted to the chair. The minutes of the preceding meeting were then taken as read, and passed. The Hull Scientific Club, and the Ellesmere School Natural History Society (Harrogate) were then unanimously admitted into the Union. The following new members were then elected by an unanimous vote, each having been first duly proposed and seconded:—Rev. T. G. Butterworth, M.A., Headingley near Leeds; Robert Kidston, F.R.S.E., F.G.S., Stirling; Robert Law, F.G.S., Halifax; Angus Macpherson, Coatham; Charles Oldroyd, Snainton near Heslerton; Rev. W. Hunt Painter, Knypersley Hall near Congleton; C. Arthur Payne, Baldersby; Sir H. Beresford Peirse, Bart., Bedale

Hall ; Rev. T. Powell, Healey Vicarage near Masham ; Mrs. Pulleine, Clifton Castle near Masham ; Simon T. Scrope, J.P., D.L., Danby-super-Yore ; George Silabon, Hull ; Christopher W. Smith, Harome near Nawton ; Edgar R. Waite, Leeds ; and Henry Weetman, F.Z.S., Howden Hall, Derwent near Sheffield. The roll of Societies was not formally called over, but it was ascertained that representatives from the following 17 Societies were present :—Leeds (4 societies), York, Malton, Hull, Halifax, Rotherham, Cleveland, Harrogate (2), Craven, Middlesbrough, Leyburn, Scarborough, and Practical Naturalists' Society. Thanks were unanimously voted to Lord Bolton for permitting members to wander over his estates, and to the Hon. W. T. Orde Powlett for permission to see his Ethnological and Archæological museum at Bolton Castle, to Messrs. W. Horne, F.G.S., Arthure, J. A. Rodwell, and E. Chapman for their services in guiding the party during the day ; and to the Leyburn Society for securing the use of the Public Hall for the meeting. Thanks were also given to Prof. Green for presiding, and it was determined to dispense with the Sectional reports on account of the fineness of the evening and the desire of members to be in the open air. The Sectional Reports which should have been given were the following :—

For the Entomological Section, its senior secretary, Mr. G. C. Dennis, of York, reported that only very few members were present, no doubt on account of it being too early in the year, and but four captures were made — viz., *Pieris rapæ*, *Vanessa urticae*, *Thera obeliscata*, and larvæ of *Nudaria mundana*.

The Conchological Section was strongly represented, both its secretaries—Messrs. John Emmet, F.L.S., of Boston Spa, and Baker Hudson, M.C.S., of Redcar—being present, and the shell-collectors on the ground also included Messrs. W. Cash, F.L.S., Halifax ; Wm. Coates, M.C.S., Middlesbrough ; W. Denison Roebuck, F.L.S., Leeds ; T. A. Lofthouse, Middlesbrough, and others. Mr. Baker Hudson furnished the report, as follows :—The conchological members, after a brief survey of the museum at Bolton, descended to the lower portions of the castle, where they commenced operations by securing *Helix rotundata*, *H. rufescens*, *Pupa umbilicata*, *Arion ater*, *Limax agrestis*, and a good specimen of its uncommon variety *nigra*. The direct route was then taken for Scarth Nick, and although the heat had dried up the road-sides, hedge-bottoms, and mossy walls, yet finds were rapidly made. *H. arbustorum* was to the fore, quickly followed by *H. lapicida* and *H. rufescens*. *H. rupestris* was abundant even in the driest situations. *Zonites* came slowly to hand, but before the Nick was reached *Z. crystallinus*, *Z. purus* and its var. *margaritacea*

were noted down. *Balea perversa* was twice taken, and *Bulimus obscurus* was not uncommon. The other species observed were—*Zua lubrica*, *Vittrina pellucida*, *Helix hispida*, *H. rotundata*, *H. hortensis*, *H. pulchella*, *H. ericetorum*, and *Clausilia rugosa*. Near the Nick, Mr. Braim, of Pickering, was lucky enough to secure an immature specimen of the rare *Limax cinereo-niger*, which was undoubtedly the event of the day. Keeping along the scars above Preston, *Zonites radiatulus* was met with under stones on the ledges, a somewhat unexpected locality. *H. rupestris* was still abundant, and *H. ericetorum* not uncommon. *Bulimus obscurus* was frequent under stones, associated with *H. rupestris* and *H. pulchella*. The list for Preston Scar, in addition to those already mentioned, included *H. rotundata*, *H. nemoralis* (dead), *H. hortensis*, *Pupa umbilicata*, *Clausilia rugosa*, *Arion hortensis*, and in a small drinking-trough on the moor, *Limnæa truncatula* (fine) was secured. On reaching Leyburn Shawl, *Clausilia laminata*, *Zonites nitidulus*, *Vittrina*, *Azeca*, *Helix hortensis*, and *Arion bourguignati* were boxed, and on meeting with a contingent who had worked along the valley through Bolton Woods, *Helix aspersa*, *Succinea elegans*, *Zonites cellarius*, *Z. alliarius*, and *Zua* were reported, whilst Mr. Wm. Cash, F.G.S., F.L.S., stated he had observed *Ancylus fluviatilis*, *Limnæa peregra*, and *Anodonta (anatina?)* in the River Ure near Leyburn; and later on, the ornithologists brought *Z. nitidulus*, found near Locker Tarn. The Section had therefore to report a total of thirty-five species as having been observed during the day, of which four were fluviatile and thirty-one terrestrial.

For the Geological Section, Mr. S. A. Adamson, F.G.S., of Leeds, secretary, the only sectional officer present, reported that from Leyburn Station, Mr. William Horne, F.G.S., pointed out the character of the section through which the railway passed. It was composed of a tough boulder clay, the included stones being local in their origin, the whole being produced by a glacier, which descended from the head of the dale, grinding and polishing the rocks as it passed along. From Redmire Station, where the members alighted, Mr. Horne conducted the party to Bolton Castle, the famous feudal stronghold of the Scropes, and although geologists in the field have little time to spare for archæology, yet here was something specially interesting. Mr. Horne had, in March 1884, discovered the remains of a human skeleton on the hill-side west of Leyburn, and near it found a bone implement made of a deer's horn. In March 1885, he found another skeleton in the same locality, and then succeeded in discovering the entrance to a cave, where a number of human and other bones were picked up. This cave he has named the 'Lady Alghitha Cave,' and the pre-historic relics found

deposits and the immediate proximity of land. Mr. Horne now conducted the geologists by a mercifully easy gradient, considering the high state of the thermometer, to the summit of Redmire Scars, some 1,100 ft. above sea-level. And now ample opportunity offered of grasping the physical geology of the wide expanse before us. We were now on the escarpment so prominent from the valley, and upon the bed known as the 'Main Limestone,' and Mr. Horne pointed out, directly in front, but on the opposite side of the valley, an escarpment just below the grit-capped summit of Penhill, and forming part of that gigantic elevation, the same bed of limestone dipping gradually eastwards, a conclusive proof that Wensleydale is a valley of denudation. The view from this point was expansive and beautiful. To the left, above the historic pile of Middleham, rose the wooded heights of East Witton Fell. Then before us rose the giant mass of Penhill, and to the west, peeps of Bishopdale and Waldendale were afforded, whilst more to the right, the flat-topped summit of Addlebrough was conspicuous. Heights in Craven and North-western Yorkshire bounded the view. Below was the verdant smiling valley, rich in pastoral beauty, with the silvery Ure meandering through it. This was a scene not only conveying splendid practical lessons in denudation, but also inspiring an ardent love for nature. We now traversed the summit of the escarpment in an eastwardly direction, the fresh mountain breeze being a pleasant contrast to the murky, smoke-laden atmosphere of the West Riding.

A descent was then made, when the party, under the guidance of Mr. Rodwell, visited the Keld Head Lead-mines, when the débris at the mine was carefully examined, and ample explanations given as to the working, etc., of the mine by the conductor. The hill was again ascended, and half-way between the river and the summit Mr. Horne pointed out the remains of small homesteads, alleged to be of early British origin; whoever the builders were, they had a large stock of common sense. These homesteads are always on the gritstone. Gritstone is not only drier in its nature than limestone, but also easier to build a rude wall with. Again, these grits always rest upon shales which throw out the water which had percolated through the upper beds: thus they were sure of good water close at hand. Another easy ascent brought the party to the top of Leyburn Shawl, that splendid terrace of limestone overlooking Wensleydale. Its highest part is about 870 ft. above sea-level, and as the whole length is traversed by carefully-kept paths, fine views of the dale are readily obtained. Mr. Horne now called a halt to inspect the 'Lady Alghitha' Cave, but an amusing delay was occasioned by the dis-

covery that some mischievous vertebrates had devoured the candles necessary for exploration. When a fresh supply was obtained, the party entered it by two at a time to inspect the interior; the entrance is only 4 ft. 4 in. wide by 4 ft. high, but inside it is $7\frac{1}{2}$ ft. high and 5 ft. to 7 ft. wide. The lower part of the cave, when discovered, was filled with clay, the upper part with cave-earth and stones, and throughout were found teeth and bones of animals, also some charcoal. At the bottom of the cave there is a fissure varying from 7 in. to 12 in. wide, filled with clay; in this, bones were also found. Inside the cave likewise were found broken pieces of slightly-burnt pottery—some only dried—and several millstone grit rubbing-stones. At the keeper's lodge a detour was made to the left by a few knights of the hammer to visit the Black Flags Quarry, when they were gravely informed by the workmen it was the only one of the kind in England! Here the 'main limestone' is quarried extensively, which is overlaid by some extremely variable beds. Some are impure, earthy limestones; others hard, irregularly bedded sandstones; whilst others again are sandstones of a flaky, micaceous character. Some beds are very fissile, and intensely hard and durable; they are thus well adapted for roofing and flagging purposes. Some large slabs, five or six ft. square, were noted as having been obtained from this quarry. The beds are in places very bituminous. The hungry geologists now made a determined attack upon the resources of the 'Golden Lion' Hotel, with marked success, after which an adjournment was made to the Public Hall, where Prof. Green, with celerity, disposed of the business of the General Meeting.

The evening was far too fine for indoor debate, and moreover a splendid section remained to be seen at the Harmby Limestone Quarries, about a mile east of Leyburn. Thither the section departed, to work until the time approached for return. Here there is a truly imposing section of the 'main chert,' or upper portion of the 'main limestone, or what is locally known as the 'red beds,' exposed. The latter name is owing to the limestone having a reddish hue in many places, from oxidation. It is very massive and crystalline, presenting, when weathered, a very coarse exterior; this, under a lens, showing an infinite multiplicity of broken crinoids and shells. Mr. Horne has obtained many of his most beautiful fossils at this quarry. The fossils contain, amongst others, teeth and spines of fishes, and several specimens were obtained. On the return to Leyburn Station, Mr. Horne showed to the members a fine glaciated surface of limestone; he has had it carefully preserved, and properly too, for it is easy of access, and the striæ on the surface are well defined. They are in an easterly direction, showing clearly the direction of the glacier

which once descended Wensleydale. The geologists felt, on parting, that the examination of the sections alluded to, and the instruction they had received on the geology of Wensleydale from so experienced a geologist as Mr. Horne, had added largely to their practical knowledge, and constituted the day's work most valuable.

For the Botanical Section the following report was given by Mr. M. B. Slater, of Malton, who was the only officer of the Section present:—A short ramble of four hours' duration is only sufficient to give a glimpse of the fine and extensive district of Wensleydale. The 'Flora of Wensleydale,' by Mr. J. Percival, given in the May number of *The Naturalist*, includes a large list of plants that have been found growing in the district. At this early season of the year comparatively few are yet in flower. About eighty plants were seen during the excursion, many of them of general distribution, and all enumerated in Mr. Percival's list. The following include the rarer plants seen:—*Cardamine amara*, *Cochlearia officinalis*, *Viola lutea* (very abundant in some of the high pastures), *Geranium lucidum* (plentiful on old walls, etc.), *Saxifraga granulata* (not uncommon in the high pastures above the Scar), *Prunus padus*, *Myrrhis odorata*, *Adoxa moschatellina*, *Parietaria diffusa*, *Orchis mascula* (the only species of this group seen), *Saxifraga hypnoides*, and *Lathræa squamaria*.

For the Vertebrate Section, its senior secretary, Mr. James Backhouse, jun., F.Z.S., M.B.O.U., reported that, owing to the exceptionally fine weather, those belonging to the Vertebrate Section had capital opportunities of observing birds, about forty-six species in all being noted during the day. The zoological programme, carefully prepared by Mr. Carter, of Masham, indicates a rich avi-fauna for Wensleydale generally, and the species noted during the day show that the Leyburn district is a rich corner for research. Among the most satisfactory discoveries of the day must be mentioned the nesting-place of the Black-Headed Gull (*Larus ridibundus*), at least one pair of which were seen, but no nest found. In the same place, too, four pairs of Redshanks evidently had eggs or young, and a Curlew's nest was noticed hard by, containing two eggs. Some of the migratory species proved very common (notably the Willow Warbler), whilst others again appeared scarce, but possibly the late season may account for it in measure. The Redstart was seen nesting, and all three Wagtails noted. Three or four Peewits' nests repaid the careful watchfulness of our collectors, all with eggs, most of which were fresh.

The Section for Micro-Zoology and Micro-Botany was not represented, its secretary, Mr. J. M. Kirk, of Doncaster, being absent, from ill-health.

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GEOLOGY AND PALÆONTOLOGY, 1886.

WE are again indebted to Messrs. S. A. Adamson, F.G.S., and Alfred Harker, M.A., F.G.S., for the geological bibliography; to both gentlemen for contributing the titles and abstracts, and to the former for arranging and preparing the material for the printer. Titles are cited of such papers published in 1884 and 1885 as have escaped notice in former instalments of the bibliography. Papers which have appeared in *The Naturalist* itself are cited but not abstracted.

S. A. ADAMSON.

Yorkshire.

On the Discovery of a Stone Implement in Alluvial Gravels at Barnsley.

[Details of a section exposed in excavating a gasholder tank in the gravel; a singular implement of Mica-schist discovered.] *Proc. Yorks. Geol. and Polyt. Soc.*, 1886, pp. 281-282.

S. A. ADAMSON.

Yorkshire.

On 'Recent Discoveries of Carboniferous Vegetation in Yorkshire'

(abstract). [The fine examples of *Stigmaria ficoides* at Clayton near Bradford, and the group at Bradford reviewed; accurate measurements of the roots, with details as to their geological horizon given. A fossil tree (*Dadoxylon*?) at Ilkley in the Third Grits similarly described.] *Trans. Leeds Geol. Assoc.*, Part 2, 1885-6, pp. 71-75; see also *Naturalist*, 1886, pp. 252, 284, 309, 316, 336, 348.

S. A. ADAMSON.

Yorkshire.

[Reports of] Excursions (Leeds Lower Coal Measures, Nos. 1, 2, and 3). [Description of the beds in descending order from the Beeston Bed to the Better Bed Coal. Careful detailed measurements of the sections by B. Holgate, F.G.S., included.] *Trans. Leeds Geol. Assoc.*, Part 2, 1885-6, pp. 77-80.

S. A. ADAMSON.

Yorkshire.

[Report of] Excursion to Draughton. [The contortions of Mountain Limestone at Draughton described, with angles of dip given. Abstract of address by J. E. Bedford on causes of above included.] *Trans. Leeds Geol. Assoc.*, Part 2, 1885-6, pp. 80-81.

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[Report of] Excursion to Bingley (Aire Valley). [Gravel-mounds of Airedale described, the Aire turned out of its course by these deposits, so that it flows *up* the valley for a short distance and cuts a new channel through sandstone.] *Trans. Leeds Geol. Assoc.*, Part 2, 1885-6, pp. 82-83.

S. A. ADAMSON.

Yorkshire.

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- S. A. ADAMSON. Yorkshire.
[Report of] Excursion to Crummockdale [Fine glaciated surfaces of Silurian Grit observed]. Trans. Leeds Geol. Assoc., Part 2, 1885-6, pp. 87-88.
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[Report of] Excursion to the 'Hitchingstone,' Keighley Moors. [Object of this excursion to solve whether this rock is a true erratic or in situ. After detailed examination, result being conclusive that it is a portion of the original strata of Rough Rock, which once covered the moors; therefore, a wreck caused by denudation, and not due to glacial action.] Trans. Leeds Geol. Assoc., Part 2, 1885-6, pp. 88-90; see also Naturalist, 1886, pp. 333-336.
- ANONYMOUS [not signed]. Yorkshire.
Cave-hunting in Yorkshire [Describing the well-known Wethercote (Chapel-dale), Hull and Hunt Pots (on Penyghent), Alum Pot (Ingleborough), an Goyden Pot (Nidderdale).] Chambers' Journal, Oct. 16th, 1886, 5th series, iii. 657-660.
- H. C. BEASLEY. Cheshire.
A Section of the Upper Keuper Beds recently exposed at Oxtou [Section in Wellington Road, Oxtou, minutely detailed]. Proc. Liverpool Geol. Soc., vol. v. Part 2, 1886, pp. 134-136.
- A. BELL. Northern Counties generally.
The Succession of the Later Tertiaries in Great Britain [A comprehensive discussion of the question, treating, among other deposits, of the Great Chalky and Purple Boulder-clay, the Bridlington shelly patches, the Hessle Sands, the Hessle Clay, and the Upper Boulder-clay of the North-west, and various post-glacial formations]. Geol. Mag., Feb. 1886; Dec. iii., vol. iii., pp. 67-78.
- W. BOYD DAWKINS. North of England generally.
On the Geography of Britain in the Carboniferous Period [The great horizontal tract of forest clad alluvia (the cause of the coal-fields) was the delta of a mighty river, and its enormous extent implies a river of great magnitude and a continent of corresponding extent for drainage area. Such continent he names Archaia, from the original massive being composed of Archaian rocks. To this Archaia may be traced the pebbles and groups of pebbles found in the coal-seams, and which have probably been brought down in flood-time by the roots of trees. They are, without exception, quartzites, and have probably been derived from a shingle beach of a sea which beat against Cambrian or Silurian rocks. The north-western continent of Archaia occupied the North Atlantic area, stretching from the west coast of Ireland and the Highlands of Scotland to Greenland and the St. Lawrence region from the Cambrian age, through all the succeeding periods, down to the close of the Miocene, and on its ever-oscillating coast-lines the British primary and secondary strata were accumulated]. Trans. Manch. Geol. Soc. xix. 37-47.
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On a Remarkable Section in Derbyshire [A sand-pit at Longcliff shows a series of variegated sands and clays resembling those of Alum Bay. They lie in a hollow of the Carboniferous Limestone, and the question is whether they are referable to the Bunter, or whether they may be remnants of Tertiary beds]. Geol. Mag., September, 1886, Decade iii., vol. iii. p. 432.
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SAMUEL CHADWICK.

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Geology of the Hull, Barnsley, and West Riding Junction Railway and Dock [Reviewed in Naturalist, June 1886, p. 191]. Hull, 1886, 60 pp., with sections and map.

W. G. COLLINGWOOD.

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JOHN CORDEAUX.

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On some remains of Fossil Trees in the Lower Coal Measures at Clayton, near Halifax [Short description of the fossil trees found at Clayton, Wadsley, and Queensbury]. Proc. Yorks. Geol. and Polyt. Society, 1886, pp. 253-256.

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The Pleistocene Succession in the Trent Basin [In this valuable contribution to the correlation of the British glacial deposits, the author divides the Pleistocene of the Trent Basin into three epochs, the oldest being marked by the absence of chalk-débris. These three epochs are subdivided, and the deposits discussed in detail, with particulars of many interesting sections. Abstract. Proc. Geol. Soc., May 12th, 1886]. Quart. Journ. Geol. Society, vol. xlii. pp. 437-480.

C. E. DE RANCE.

Lincolnshire, Yorkshire, etc.

Eleventh Report of the Committee, consisting of . . . [20 names] . . . appointed for the purpose of investigating the Circulation of Underground Waters [etc.]. [Particulars are given of borings near Grimsby, Goole, Raw-

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General Section of the Lower Coal Measures and Millstone Grit Rocks in the Forest of Rossendale, with remarks on some of the fossiliferous beds contained therein [General section of beds in descending order, commencing about 220 yds. below the Arley Mine. This succeeded by details of each bed and fossils pointed out. The sandstones, with their intervening shales, marked the different conditions under which they were respectively deposited, the former containing the remains of land plants (Ferns, Calamites, Sigillaria, etc.), while the shales contain a marine fauna of well-known carboniferous types (Orthoceras, Goniatites, Productus, Lingula, Aviculopecten, etc.]. Trans. Manchester Geol. Soc., xix. 220-233.

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Yorkshire.

On Mesozoic Angiosperms [Describes *Williamsonia* from the Yorkshire Oolites, and figures a supposed Monocotyledonous fruit from the same, and also the stem of the so-called *Calamites Beanii* from Scarborough, 'one of the Arborescent Gramineæ' (Williamson)]. Geol. Mag., May 1886; Dec. iii. vol. iii. pp. 193-204, with plates v. and ix.

A. H. GREEN.

North of England generally.

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C. D. HARDCASTLE.

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On 'Metamorphic Rocks' (Abstract). [Process of metamorphism in different stages described; Sandstones from Meanwood Road, Leeds, Middle Grits of Bolton Woods and Potternewton, examined.] Trans. Leeds Geol. Assoc., Part 2, 1885-6, pp. 62-64.

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Jointing in the Mountain Limestone of the Austwick District. Naturalist, 1886, p. 102.

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Joints cutting through Pebbles. Naturalist, 1886, p. 102.

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Notes on the Topography of Liverpool [Brief geological account including localities of Boulder Clay and list of quarries]. Proc. Liverpool Geol. Soc., Part 2, vol. v. 1886, pp. 145-155.

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On 'The Leeds Lower Coal Measures' (Abstract). [Outcrops of following beds of coal noted at Leeds, viz., the Better Bed, the Black Bed, the Crow Coal, and the Beeston Bed.] Trans. Leeds Geol. Assoc., Part 2, 1886, pp. 49-50.

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Leeds Lower Coal Measures [Detailed measurements of sections occurring at Hunslet, Newtown and Dolly Lane, Leeds, given]. Trans. Leeds Geol. Assoc., Part 2, 1885-6, pp. 77-80.

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Purple-grey Carboniferous Rocks and the Whitehaven Sandstone [Rocks similar to the Whitehaven Sandstone occur on almost every horizon throughout the Carboniferous System in Cumberland]. Trans. Cumb. and Westm. Assoc., No. xi. 1885-6; pp. 146-148.

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Yorkshire, Westmorland.

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OSMUND W. JEFFS.

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T. RUPERT JONES and J. W. KIRKBY. Northern Counties and Isle of Man.

Notes on the Distribution of the Ostracoda of the Carboniferous Formations of the British Isles [Contains tables showing the stratigraphical distribution of these entomostracans through the Carboniferous formations, preceded by some notice of the classifications of these strata]. Quart. Journ. Geol. Soc., 1886, vol. xlii. pp. 496-514.

T. R. JONES and J. W. KIRKBY.

Northumberland, etc.

On Some Fringed and other Ostracoda from the Carboniferous Series. [Records a new genus *Beyrichiopsis*, and figures and describes species of it from Plashetts and other localities.] Geol. Mag., Oct. 1886; Dec. iii. vol. iii. pp. 433-439, and plates xi. and xii.

Westmorland, Furness, Northumberland,

T. RUPERT JONES and JAMES W. KIRKBY.

Durham, Cumberland.

Notes on the Paleozoic Bivalved Entomostraca.—No. xxii. **On some undescribed Species of British Carboniferous Ostracoda** [*Bythocypris phillipsiana* Jones & Holl., var. nov. *carbonica* J. & K., *B. cuneola* J. & K., *B. cornigera* J. & K., *B. pyrula* sp. nov., *B. thraso* J. & K., *Cythere*

Naturalist,

gyripunctata J. & K., *Leperditia armstrongiana* J. & K., *L. scotoburdigalensis* (Hibbert), *L. obesa* J. & K., *L. compressa* J. & K., *L. lovicensis* sp. nov., *L. acuta* J. & K., *Beyrichia radiata* J. & K., *B. longispina* sp. nov., *B. tuberculospinosa* sp. nov., *B. bicosa* sp. nov., *Beyrichiella ventricornis* J. & K., *Kirkbya tricollina* J. & K., *Cytherella reticulosa* J. & K., *C. valida* J. & K. var. nov. *affiliata*, *Bythocythere antiqua* sp. nov., *B. youngiana* sp. nov., *Argillæcia equalis* J. & K., *Aglaia cypridiformis* J. & K., *Xesoleberis subcorbuloides* J. & K., *Cythere obtusa* sp. nov., *Bairdia legumen* J. & K., *B. subelongata* J. & K., var. *major*, cited from numerous localities in Northumberland, Cumberland, Furness, and Westmorland]. Ann. & Mag. Nat. Hist., Oct. 1886, Series 5, vol. xviii. pp. 249-269, and plates vi-ix.

A. J. JUKES-BROWNE. Northern Counties in general.

The Student's Hand-book of Historical Geology, xi+597 pp., London, 1886. [This manual is illustrated by many well-selected sections, and the matter brought well up to date. Adopting Lapworth's tripartite division of the Lower Palæozoic, the author gives a good résumé of the Cambrian, Ordovician, and Silurian rocks of the Lake District. In the Carboniferous he inclines to Tate's classification of the Northumbrian type, as adopted by the Survey (pp. 207, 208). The Dyas and Trias of the North of England are well summarised; also the Jurassic rocks—which are presented under unfamiliar divisions—and the Cretaceous. In describing the Glacial deposits of Lincolnshire and Yorkshire, the author adopts the two-fold division, for which he has given reasons elsewhere.]

A. J. JUKES-BROWN. Yorkshire and Lincolnshire.

On the Application of the term Neocomian [The author attempts to correlate the Lower Cretaceous strata of Yorkshire and Lincolnshire with their equivalents in other areas]. Geol. Mag., July 1886, Dec. iii. vol. iii. pp. 311-319.

J. D. KENDALL.

The Iron Ores of the English Secondary Rocks. Trans. North of England Inst. of Mining and Mech. Eng., vol. xxxv. p. 105, 1886.

PERCY F. KENDALL. North of England generally.

On the Carboniferous Volcanoes of Great Britain. [The toadstone of Derbyshire alluded to, and the fact of a bed of baked mud lying between this and the Mountain Limestone, in Tideswell Dale, having assumed a columnar structure.] Trans. Manchester Geol. Soc., vol. xix. Parts 6 and 7, pp. 133-151.

H. WALLIS KEW. Lincolnshire.

A Post-Glacial Ravine [at Welton Vale near Louth, described and plan given]. Nat. World, Feb. 1886, iii. 21-22.

ROBERT KIDSTON. Northern Counties generally.

Catalogue of the Palæozoic Plants in the Department of Geology and Palæontology, British Museum (Natural History), pp. 288, with list of works quoted and index. [This invaluable work of reference for palæobotanists is an enumeration of the Palæozoic Plants with their synonymy. The classification employed is that at present adopted by the majority of palæo-phytologists, with slight modifications. The plants are treated under the four great divisions of the Palæozoic rocks, viz., Permian, Carboniferous, Devonian, and Silurian. In the Botanical arrangement the Family is first given, following which is the Genus, with its author's name, date of its publication, and reference to the work in which it first appeared. The specific name adopted follows, with its synonymy, the oldest name of the plant in question being used. The geological horizon of the specimen then follows, after which the locality; there are many hundreds of references to localities in the North of England. In the Index, the accepted names of genera and species are printed in ordinary type, the synonyms in italics].

- L. G. DE KONINCK and M. LOHEST. **Yorkshire.**
Notice sur le Parallélisme entre le calcaire Carbonifère du nord-ouest de l'Angleterre et celui de la Belgique [Compares the beds which unconformably overlie the Silurians in the Ingleborough district with the Carboniferous Limestone of Belgium]. *Bulletin de l'Acad. Roy. de Belg.*, 3me sér., tom. xi. No. 6, 1886. Noticed in *Geol. Mag.*, October 1886; Dec. iii. vol. iii. pp. 463, 464.
- G. W. LAMPLUGH. **Yorkshire.**
On Glacial Shell-beds in British Columbia [with discussion; these deposits are pointed out as closely resembling those at Bridlington]. *Abstract. Proc. Geol. Soc.*, April 7th, 1886.
- G. A. LEBOUR. **Northumberland, Durham, Yorkshire.**
Outlines of the Geology of Northumberland and Durham. 1886, Newcastle-upon-Tyne; 156 pp. and 5 plates. Second edition as regards Northumberland. [Reviewed in *Nature*, July 26th, 1887, and in *Naturalist* for September 1887.
- G. A. LEBOUR. **Durham.**
On some recent Earthquakes on the Durham Coast, and their probable cause [see Bibliography for 1885 for Abstract]. *Brit. Assoc. Report*, 1885, Aberdeen, pp. 1013-1015.
- H. CARVILL LEWIS. **Northern Counties generally.**
Comparative Studies upon the Glaciation of North America, Great Britain and Ireland [Abstract of paper read before British Association. The southern edge of the great ice-sheet, as marked by a great terminal moraine, is traced from Macclesfield, by Burnley and Skipton, to Whitby. Great glaciers descended Airedale and Wensleydale. A branch of the ice-sheet was forced eastward through Stainmoor Pass. The author does not believe in any submergence of more than 450 ft.]. *Nature*, Nov. 25th, 1886, vol. xxxv. pp. 89-91.
- E. LOVETT. **Yorkshire.**
Notes on the Glacial Deposits and other interesting Geological Features of North Yorkshire. *Proc. and Trans. Croydon M. and N. H. Club*, vol. iii. p. 37, 1886.
- FRANK E. LOTT. **Derbyshire.**
[Remarks upon the Geological features of the district within 20 miles of Burton-on-Trent, introductory to a list of] the Lepidoptera of Burton-on-Trent and neighbourhood. *Entomologist*, July 1885, vol. xviii, pp. 178.
- [EDITOR OF MANX NOTE-BOOK]. **Isle of Man.**
Geological Survey of the Island [of Man: merely a note that Prof. W. Boyd Dawkins has commenced one]. *Manx Note-Book*, No. 8, Oct. 1886, vol. ii. p. 191.
- P. H. MARROW. **Cheshire.**
On 'Triassic Sandstones of West Cheshire' (Abstract). [These rocks result from re-deposition of the palæozoic rocks after denudation. Beautiful examples of current-bedding noted, particularly in a section running through Wallasey. Conditions of deposition reviewed, and composition of the triassic rocks described.] *Trans. Liverp. Geol. Assoc.*, vol. xi. 1885-6, pp. 18-21.
- R. MELDOLA. **Lincolnshire, Yorkshire, Cumberland.**
The Great Essex Earthquake of the 22nd of April, 1884 [felt as far as Brigg and Leeds; reference made to previous earthquakes; a terrible one in A.D. 261 in Cumberland; one in April 1185, in Lincoln, damaging the Cathedral]. *Trans. Herts Nat. Hist. Soc.*, vol. iv. Pt. I (May 1886), pp. 23-32.
- HUGH MILLER. **Cumberland.**
On the Geology of the Silloth Dock. *Proc. Edinb. Roy. Phys. Soc.*, Session 1884-5, p. 338, 1885.

- HUGH MILLER. Northumberland.
On the Classification of the Carboniferous Limestone Series; Northumbrian Type [reasserts the classification proposed twenty years back by Tate]. Abstracts of Brit. Assoc. Papers, Nature, Sept. 23rd, 1886, vol. xxxiv. p. 515.
- J. H. MONCKMAN. Yorkshire.
On 'The Volcanic History of England' (Abstract). [Castle Rigg, in the Lake District, shown to be the neck of an ancient volcano]. Trans. Leeds Geol. Assoc., Part 2, 1886, pp. 56-58.
- J. R. MORTIMER. Yorkshire.
On the Habitation Terraces of the East Riding [A description of the lance-pointed terraces or platforms, which are visible on many of the steep hill-sides of the Yorkshire Wold valleys]. Proc. Yorks. Geol. and Polyt. Soc., 1886, pp. 221-224.
- H. ALLEYNE NICHOLSON. Yorkshire, Derbyshire, and Northumberland.
On the Genus *Fistulipora*, M'Coy, with Description of several species [including *F. incrustans* from Bolland, Derbyshire, and Redesdale]. Ann. and Mag. Nat. Hist., 1885, 5th Series, vol. xvi. pp. 496-517, and plates xv-xviii. [pp. 500-505].
- H. M. ORMEROD. Cheshire.
On some markings upon a sandstone flag at Tyldesley. [The flag from the Lower Coal Measures; the markings seemed to Mr. Ormerod to be that of a reptilian animal—like that of *Keratropeton*]. Trans. Manchester Geol. Society, Part 12, vol. xviii. pp. 293-295.
- R. OWEN. Northern Counties, etc.
British Earthquakes and their Seismic Relations [Of the 399 British earthquakes recorded in Mallet's Catalogue, 315 are connected with a great circle drawn through Stromboli and Hecla, and passing near Colchester, Lincoln, and York]. Proc. Amer. Assoc. Advancem. Sci. for 1884, pp. 438-433, with map: 1885.
- HORACE PEARCE. Westmorland.
Glacial Action near Grasmere [Great number and size of glacial moraines near the outlet of Easdale Tarn briefly alluded to]. Sci. Goss., Aug. 1886, p. 189.
- J. PETERSEN. Northumberland.
Analyses of Enstatite and Labradorite from the Enstatite-Porphyrity of the Cheviot Hills. [The rock is the Hypersthene-andesite described by Teall.] Zeitschr. für Krystallogr. u. Mineral, vol. xi. pp. 69-70. Quoted in abstr., Journ. Chem. Soc., vol. 1. p. 211: 1886.
- G. H. PHILIPSON. Northern Counties.
[Review of Excursions, in Presidential Address; Hexham and district; Alston, for Cross Fell and Hartside (the 'Great Sulphur Vein' noted); Low Row and district; Leyburn, Loftus, and Staithes (Boulder of Shap noted at Hammersea, description of Rockcliff); Seaton Delaval and Blyth]. Nat. Hist. Trans. of Northumb. and Durh., vol. viii. Part 2, pp. 278-291.
- J. POSTLETHWAITE. Cumberland.
The Mineral Springs near Keswick [comprise saline waters at Brandley Mine and Saltwell Park, and a chalybeate spring at Wood-end Mine.] Proc. Cumb. and Westm. Assoc., No. xi. (1885-6), pp. 142-145.
- JOSEPH PRESTWICH. Northern Counties generally.
Geology, Chemical and Physical: vol. 1, pp. 472, with maps, plates, and diagrams. [This magnificent work contains many references to the physical geology of the North of England, amongst which may be noted Carboniferous Limestone of Derbyshire, Durham, and Northumberland, p. 145; faults in

the Manchester coal-field (with section), p. 252; Jointed Limestone at Richmond, Yorkshire, p. 273; slate of Patterdale quarries (with section), p. 262; mountain system of North of England, p. 292; slates of Kirkby Lonsdale, p. 279; unconformable strata in Westmorland (with section), p. 297; Coal-measures near Appleton, Yorks. (with section), p. 299; Derbyshire (Fluor spar with fossils, p. 315; galena veins, pp. 321-330; clay altered by toad-stones (with section), p. 401); Cumberland (Jointed Triassic rocks, p. 273; mineral veins of Alston Moor, with ground plan and sections, pp. 319, 320; clay veins, p. 321; lead lodes, pp. 321-330; mineral veins, p. 335; iron ore, p. 349); iron ores in Lincolnshire, pp. 355-356; igneous rocks near Borrowdale, p. 382; old volcanic neck at Castle Head, Keswick, p. 382; old volcanic ash of Skiddaw, p. 382; intrusive basalt of Northumberland, p. 400; coal altered in Durham, p. 401; granite of Eskdale and Skiddaw, p. 425].

J. PRESTWICH.

Northern Counties generally.

On Underground Temperatures [A complete record of temperature observations in mines, wells, bore-holes, etc., including many in Lancashire, Durham, and other northern counties.] Proc. Roy. Soc., vol. xli, pp. 1-116, 1886.

T. MELLARD READE.

Northern Counties generally.

The Origin of Mountain Ranges, pp. 359, maps, plates, and diagrams. [This valuable work is full of descriptions of remarkable geological features in the North of England, amongst which may be named the Pennine Chain, pp. 32, 76, 77, 171, 320; Vale of Eden, pp. 79, 80, 321; denudation of Lancashire and Cheshire since Trias, p. 79; Craven fault at Giggleswick Scar (with plate), pp. 80, 81; fault in Mersey Tunnel, p. 104; Yorkshire Coal Field, sections exhibiting characteristic features of normal faulting (with plate), pp. 106, 107; Synclinal at Wheatam near Skipton (with plate), p. 179; Anticlinals at Draughton near Skipton (with plate), p. 179, and at Aldecarr Wood (Notts.), p. 219; effects of pressure on Scar Limestone, p. 179; contortions in Chalk at Staple Nook, Flamborough Head, pp. 218, 219; Slickensides in Keuper sandstone (Cheshire, Liverpool, etc.), pp. 275, 276; destruction of all beds above New Red in N.W. of England, p. 324.]

T. MELLARD READE.

Lancashire.

Notes on a Bed of Fresh-water Shells and a Chipped Flint lately found at the Alt Mouth. [The shells, consisting of *Lymneus lymnea*, *L. peregra*, *Cyclas cornea*, and *Planorbis spirorbis*, were crowded in a bed of mixed peat, sand, and mud; immediately under the sandhills, close to this bed, a small flint flake was found]. Proc. Liverpool Geol. Soc., Part 2 of vol. v. (1886), pp. 137-139.

CHARLES RICKETTS.

Cheshire.

On Footprints and Plants in the Trias at Oxtan Heath. [In the making of a sewer at Oxtan many slabs of Keuper sandstone were exposed, bearing upon them casts of the footprints of quadrupeds and of the impressions of leaves of plants. The bird-like imprints of *Rhynchosaurus* exceedingly plentiful.] Proc. Liverpool Geol. Soc., Part 2 of vol. v. (1886), pp. 168, 169.

A. S. STEVENSON.

Northumberland, Durham, Yorkshire, Westmorland.

[Review of Excursions in Presidential Address; Talkin Tarn (remarkable row of pot-holes in red sandstone); Settle and district (pot-holes in conglomerate at Kirkby Stephen, Victoria Cave, Malham, Ingleborough Caves, and Gaping Ghyll); Crag Lough; Barnard Castle (Balderdale investigated); Otterburn (some fossil footprints examined); and Morpeth]. Nat. Hist. Trans. of Northumb. and Durham, Part 2 of vol. viii. pp. 225-239.

W. STEVENSON.

Yorkshire.

A Post-Glacial Forest in Hull. [Remains of a forest of Scotch fir and oak, found about low-water level, covered by 12 or 13 ft. of warp]. Eastern Morning News, Aug. 1886; and anonymous article in Sci. Goss., Sep. 1886, p. 214.

M. STIRRUP.

Lancashire.

Fall of Roof in a Mine at Little Lever. [A huge mass of fine-grained, slightly micaceous sandstone, with a polished carbonaceous coating (said in a newspaper to be a meteorite), fell from the roof and killed a workman. In discussion, Mr. Wild said this was not a boulder, but a pocket of sandstone.] Trans. Manchester Geol. Society, vol. xix. Part 5, pp. 109-114.

M. STIRRUP and H. H. BOLTON.

Lancashire.

Boulder and Fossil Plant from the Gannister Coal, Bacup. [Boulder embedded in the roof, close to the top of the coal, in the Old Meadow Pit. Fossil identified by Prof. Williamson as a terminal bunch of leaves of a species of *Cordaites*, and found in the same mine.] Trans. Manchester Geol. Soc., vol. xix, Part 10, pp. 233-235, with photograph.

H. B. STOCKS.

Yorkshire.

On a Concretion called Acrespire. [A local name for some curious concretions in the Millstone Grit. Analyses of specimens from Ringby and Lightcliffe, near Halifax; also for comparison, one of a white sandstone from Halifax. The essential difference is that the acrespire contains about 32 per cent. of carbonate of lime.] Proc. Yorks. Geol. and Polyt. Soc., 1886, pp. 149, 150.

A. STRAHAN.

Lancashire and Cheshire.

On the Glaciation of South Lancashire, Cheshire, and the Welsh Border. [About Liverpool the average direction of glacial striae is N. 28° W.; further up the Mersey there is a slight deflection towards the east. The materials of the drift, both matrix and boulders, have come from the north-west.] Quart. Journ. Geol. Soc., 1886, vol. xlii. pp. 369-391. Abstract in Geol. Mag., June 1886, Dec. iii. vol. iii. pp. 331-333.

A. STRAHAN.

Lincolnshire and Yorkshire.

Notes on the Relations of the Lincolnshire Carstone. [The author makes the Carstone conformable to the Red Chalk above, and probably unconformable to the Tealby Series below, thus forming the basement-bed of the Chalk. It thins out and disappears to the north]. Abstract, Proc. Geol. Soc., June 23rd, 1886; Quart. Journ. Geol. Soc., vol. xlii. pp. 486-493.

FREDERICK SWINNERTON.

Isle of Man.

Flints at Port St. Mary [detailed description of a find of a deposit denoting an ancient settlement]. Manx Note-Book, No. 6, April 1886, vol. 2, pp. 91, 92.

J. E. TAYLOR.

North of England generally.

Our Common British Fossils and where to find them, pp. 336, with index and 331 woodcuts of fossils. [This work, invaluable to fossil collectors, is divided into the following chapters:—Fossil sponges, etc.; Corallines, Corals, Encrinites, Star-Fishes and Sea Urchins, Annelids, Trilobites and other Crustacea, Polyzoa, Brachiopoda, Mollusca (Bivalves and Univalves), Cephalopods. Throughout the entire volume, localities given where above fossils may be readily found.]

J. J. H. TEALL.

Derbyshire, Yorkshire, and Northumberland.

British Petrography. [This valuable work gives descriptions of typical British rocks, illustrated by coloured plates of thin sections. Among the rocks already figured are the Olivine-Dolerite of Tideswell Dale, Dolerite dyke of Tynemouth, Enstatite-Dolerite (Whin Sill) of Middleton, and Felspar-Augite rock of Shankhouse, Northumberland. The work is advertised to be completed in 25 monthly parts.] Parts 1-10, with Plates i.-xx. February to November 1886, 4to, Birmingham.

R. H. TRAQUAIR.

Lancashire and Derbyshire.

New Palæoniscidæ from the English Coal-measures [describing new species of *Elonichthys*, including *E. aitkeni*]. Geol. Mag., Oct. 1886, Dec. iii. vol. iii. pp. 440-442.

W. TURNER.

Cumberland.

On Fossil Bones of Mammals obtained during Excavations at Silloth. Proc. Edinb. Roy. Phys. Soc., Session 1884-5, pp. 333 et sequ., 1885.

- J. STANLEY TUTE.** **Yorkshire.**
The Cayton Gill Beds. [A bed of highly fossiliferous rocks, immediately underlying the Plompton Grit, described. Localities of outcrops and fossils given.] *Proc. Yorks. Geol. and Polyt. Soc.*, 1886, pp. 265-267.
- F. F. WALTON.** **Yorkshire.**
Geology of the District between Market Weighton and the Humber. [Describing the Liassic, Oolitic, and Cretaceous strata of the district, and indicating the localities of instructive sections.] Hull, 1886, 24 pages. [Reviewed in *Naturalist*, March 1887, pp. 88, 89.]
- THOMAS WARD.** **Cheshire, Yorkshire.**
On Rock Salt. [Deposits of rock salt in various parts of the world and in all geological ages described in detail. Borings at Middlesbrough, Northwich, and other places given. Method of deposition of rock salt adduced. The geology of the Great Cheshire Triassic Salt Lake described. Conclusions arrived at: that our beds of rock salt have been crystallized out of the saturated waters of salt lakes, and that their admixture of marl has been caused by streams running into the lake during the wet seasons, and that the peculiar amorphous mixture of marl and salt, known as rock salt, is the result of the continual growth of pure salt crystals, and their partial destruction by mud-bearing fresh waters.] *Trans. Manchester Geol. Society*, vol. xviii. Part 15, pp. 396-419.
- THOS. WARD.** **Cheshire.**
On the Subsidences in the Salt Districts of Cheshire: their history and cause. [Subsidences of two classes. 1. Those taking the form of a funnel-shaped hole of varying diameter and depth. 2. Those forming trough-shaped hollows, varying in breadth and depth. The history of subsidences in Cheshire given. Causes: mining of rock salt, pumping of brine, and also from a combination of the two.] *Trans. Manchester Geol. Society*, vol. xix. Parts 6 and 7, pp. 152-172.
- J. C. WELCH.** **Cumberland, Durham.**
Analyses of Some Iron Ores [including *Hæmatite* from Ulverstone with 60·2 p.c. metallic iron, and *Limonite* from Weardale]. *Chem. News*, Jan. 29th and Feb. 5th, vol. liii. pp. 52-53, 65: 1886.
- WILLIAM WATTS.** **Lancashire.**
Geological Sketches at Piethorn and Denshaw [The glacial phenomena, stratigraphy, and physical features of this district noticed in detail]. *Trans. Manchester Geol. Soc.*, vol. xix. Part 2, pp. 47-58.
- GEORGE WILD.** **Lancashire.**
On Section of Shaft sunk through the Middle Coal Measures at Bardsley Colliery, and an interesting discovery of Calamite. [Measured section given, showing general character of strata passed through, also mineralogical and paleontological characteristics.] *Trans. Manchester Geol. Society*, vol. xviii. Part 16, pp. 446-464.
- A. S. WOODWARD.** **Yorkshire.**
Notidanus Amalthei (Oppel) [describes a tooth probably belonging to this Selachian genus, from the Middle Lias, Whitby]. *Geol. Mag.*, Nov. 1886, Dec. iii. vol. iii. pp. 525, 526.
- T. WRIGHT.** **Yorkshire.**
Monograph on the Lias Ammonites of the British Islands [concluding part, with description (pp. 482, 483) of *Amaltheus lenticularis* from the ironstone beds at Eston, Upleatham, and Hawsker, near Whitby.] *Paleontographical Society's vol.* for 1885, pub. 1886.
- [**YORKSHIRE NATURALISTS' UNION.** **Yorkshire.**
[Excursion to Askern, May 24th—Naturalist, 1886, p. 190; Excursion to Flamborough Head, June 14th—Naturalist, 1886, pp. 217-219; Excursion to Upper Nidderdale, July 17th—Naturalist, 1886, pp. 254, 255; Excursion to Pickering for Newtondale, August 2nd—Naturalist, 1886, pp. 274, 275.
Naturalist,



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THE NATURALIST

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.



EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

AND

WM. EAGLE CLARKE, F.L.S., M.B.O.U.,

CORRESPONDERENDIR MITGLIED DES ORNITHOLOGISCHEN VEREINS IN WIEN.

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LONDON:

LOVELL REEVE & Co., 5, HENRIETTA STREET, COVENT GARDEN, E.C.

McCORQUODALE & Co. LIMITED, CARDINGTON STREET, EUSTON;

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LEEDS: BASINGHALL STREET.

All Communications should be Addressed:—

The Editors of 'The Naturalist,'

Sunny Bank, Leeds.

RICE SIXPENCE (by Post, Sevenpence).

ANNUAL SUBSCRIPTION (from the OFFICE only), 5s., post free.

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BOOKS RECEIVED.

- An Illustrated Manual of British Birds, by Howard Saunders. Parts 1-3. [Messrs. Gurney and Jackson.
 Liverpool Naturalists' Field Club—Proceedings for the year 1887. [The Society.
 The Zoologist, June 1888. Third Series, Vol. 12, No. 138. [Mr. J. E. Harting, Editor.
 Charles Bailey—Obituary Notices of Anton De Bary, Asa Gray, and J. T. Boswell, 8vo, Reprint, 1888, 4 pages. [The Author.
 Manchester Geol. Soc.—Trans., Vol. 19, Parts 18 and 19. 1887-8. [The Society.
 Grevillea for June 1888, Vol. 16, No. 80. [Dr. M. C. Cooke, Editor.
 British Assoc.—Report of 57th [Manchester] Meeting, 8vo cloth, cii. + 972 + 116 pp. [The Association.
 T. D. A. Cockerell.—On the Nature of Seasonal Dimorphism in Rhopalocera (Canadian Entomologist, May 1888, xx. 86-89. [The Author.
 Natural History Transactions of Northumberland, Durham, and Newcastle-on-Tyne, Vol. 9, Part 2, 1888. [The Society.
 Manchester Microscopical Society.—Trans. and Ann. Rep. for 1887. [Society.
 Hertfordshire Nat. Hist. Society.—Trans., Vol. 4, Part 8, April 1888. [Society.
 The Young Collector Series.—British Reptiles, by C. C. Hopley. Small 8vo, cloth, 94 pages. [Swan Sonnenschein & Co.
 Psyche, a Journ. of Entom. Vol. v, No. 145, May 1888. [Camb. Ent. Club, U.S.
 Science Gossip, No. 282, for June 1888. [Messrs. Chatto & Windus, Publishers.
 The Wesley Naturalist, No. 15, for June 1888. [The Wesley Scientific Society.
 The Young Naturalist, Part 102, for June 1888. [Mr. John E. Robson, Editor.
 The Midland Naturalist, No. 126, for June 1888. [Birmingham Nat. Hist. Soc.
 Nat. Hist. Journ., No. 104, June 15, 1888. [J. E. Clark & B. B. Le Tall, Editors, York.

EXCHANGE.

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WANTED.—Living examples of *Limax arborum*, *L. lævis*, and *L. tenellus*. British Land and Freshwater Shells in exchange.—W. A. GAIN, Tuxford, Newark.

Yorkshire Neuroptera and Orthoptera.—I am anxious during the present and several future seasons to work up the Neuroptera and Orthoptera of our county as much as possible, with a view to publishing a list of species, with their localities, etc., and shall be very grateful to all entomologists (or other naturalists) who, when out collecting their own particular groups of objects, will kindly kill and pin (of course they need not trouble to set them) one or two or three specimens of any species they may come across, and send them to me at the end of the season—or oftener if it be not too much trouble. The families in the Neuroptera wanted are the *Libellulidæ* (Dragon-flies), *Perlidæ* (Stone-flies), *Sialidæ*, *Raphidiidæ* (Snake-flies), *Osmylidæ*, *Hemerobidæ*, *Chrysopidæ* (Lacewing-flies), *Coniopterygidæ*, *Panorpidæ* (Scorpion-flies), and the *Trichoptera* (Caddis-flies). The two other British groups, *Psocidæ* and *Ephemeridæ* (May-flies), I do not propose to touch at present. The Orthoptera include the *Forficulidæ* (Earwigs), *Blattidæ* (Cockroaches), *Acrididæ* (Grasshopper and Locusts), and the *Achelidæ* (Crickets), all of which, with the exception of the several universally abundant and distributed species, are wanted.—GEO. T. PORRITT, Greenfield House, Huddersfield, May 18th, 1888.

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EVIDENCES OF GLACIAL ACTION NEAR INGLETON.

ROBERT R. BALDERSTON,

Ingleton.

THE evidences of glacial action, as indicated by drift-formation, are very considerably manifested in the neighbourhood of Ingleton, in the valleys of the Greta, Twiss, and Doe. Ingleton itself stands on Drift 70 feet thick, whilst on the opposite side of the river, in Enter or Tenter Banks, the accumulation is at least 140 feet from top to bottom. This deposit consists of boulders 6 feet and less in diameter, for the most part derived from formations seen in the neighbouring hills, or from others situated elsewhere, but presenting a similar character. These boulders, when in situ, are found lodged indiscriminately in earth varying to some extent in character, according to the locality examined. In certain places—as, for instance, the neighbourhood of the church—there is a preponderance of sand and gravel as compared with clay; in others, the latter substance is more inclined to predominate. In the cutting between the Cemetery and Yarl'sber, a good section of the lighter and finer description of Drift was recently exposed; in some places there were pockets or local deposits of sand, a little of a light colour, but the greater part of very dark hue, and mixed with small pebbles of quartz, spar, and other substances; few boulders of material size were to be seen, whilst the constituents of the gravel element, where this was predominant, were small in size, and not approaching the nature of shingle. The general situations in which the constitution of the Drift is most satisfactorily examined are the river's bed or the banks immediately adjacent, the streams having cut their way between slopes of Drift towering above to the height of 100 feet to 150 feet, whence they have rolled or gradually been dislodged by the undermining action of water, so as to collect below, conveniently for the geologist's inspection. The description of boulders principally observed are: (1) Sandstones from the Yoredale Millstone Grit series; (2) Black Marble occasionally from the Yoredales; (3) Productus Limestone from the same series; (4) Crinoidal Limestone from the upper portion of the last-named formation; (5) Mountain Limestone, upper and lower; (6) Blocks and boulders from the grainless, non-fissile, Lower Llandeilo beds, locally known as 'Calliard'; (7) Numerous examples of the coarse-grained, derivative, green porphyry, found in situ in patches—not dykes or beds—at a point two miles distant from Ingleton, on the S.E. side of the Doe; finer-grained examples of

these boulders assume the appearance of a lava-trap ; (8) One small and another very small block, derived from the Red-dyke, consisting of micaceous syenite, but none evident as having come from the dyke or ridge of hornblendic grey-granite ; (9) Two boulders of silver-grey trap, specially described to the Yorkshire Boulder Committee ; (10) A few of the limestone examples may be referable to the Coniston Calcareous bed ; (11) The stratum of Silurian conglomerate is also sparingly represented in the boulder system.

The Limestone and Sandstone boulders are usually smoothed and rounded ; the hard, non-fissile Silurians are in many cases broken and angular, in others smooth and somewhat polished, and in a few, striated or marked by traces of glacial grooves and scratches. The same remarks regarding angularity and the absence of rounding and scratching apply to the blocks of derivative, green Porphyry—‘Silurian grits.’ The small blocks of micaceous syenite have both been smoothed, whilst one boulder of silver-grey trap has been distinctly rounded, but appears to some extent to have weathered again rough, so as to have lost some of its smoothness ; on the other hand, another example is decidedly angular, yet has retained a great degree of smoothness. Above the Drift, lying upon it or in the watercourses below its slopes, are the porphyritic boulders of class 7, sometimes found in considerable abundance, especially in the last-named situation, or along the edges of the old glacier-line of the Doe, even up to an altitude of 800 feet on the S.E. boundary, or 550 feet on the N.W., where the Twistleton promontory reaches its highest level, and where the line of junction of the glaciers of the Doe and Twiss must have been. As the glaciers receded, the boulders falling from the edges of that in the Doe valley were left on ground at a lower level, but not so in the Twiss. Why not? Because none of these boulders descended the Twiss valley, the porphyritic patches, if any, not being exposed in this dale, the prolongation of the strata in which those of the Doe occur, lying below the limestone of Kingsdale even now, for a time at least, safe from erosion and denudation. How is it then, that in the lower part of the Twiss ravine the same blocks and boulders are found? The answer appears to be that the glacier of the Doe being the longer and stronger of the two, overlapped its partner, or drove it to some extent to the west, and so let fall some of its freight in this region. Good examples of the green porphyritic erratics may be seen opposite the mouth of the Catleap stream, but a few yards further down the Doe, a little to the N.W. of the road on Storrs Common, at a point near the Bull-copy, and in Fell-end pasture, above the same Common.

Clay Formation.—To the E.S.E. of the Twiss, below Broadwood Weir, is a slight outcrop of a well-defined, grey-blue, firm boulder-clay of homogeneous composition and texture; the exposure is only meagre, so that a perfect examination at this point is not easily made. In a corresponding situation in the valley of the Doe, also below the mill-weir in that place, at the base of a steep bank called the Strands Waste, is an outcrop of the same bed of boulder-clay from below the Drift; here, however, it appears somewhat dingier in colour, owing to refuse that has been thrown on to the bank above. In Kingsdale, in that section called Sandymires, very thick and hard beds of clay may be observed in a deep and angular pool of the river, where they have been formed in this upper region as a basement to the lacustrine basin above the ford—a basin that appears to have been cut through by natural agencies.

Returning to the low land in the vicinity of Ingleton, clay is also found in certain places above the general Drift, and is, no doubt, referable to the Upper Boulder Clay; and from what I remember of its appearance, it is of a much darker blue than that characteristic of the stratum already described as lying below the glacial aggregation of heterogeneous rock.

From the outline of facts here presented, it may be concluded that the components of the Drift at Ingleton consist almost exclusively of local material, brought down by the two glaciers descending the valleys, and not by Icebergs, Iceflows, or the extension of larger glaciers from more distant and elevated mountains. That foreign material in the form of 'erratics' may from time to time have been added to the local deposit, when variations in physical conditions occurred, as in the case of the boulders of section 9, is undoubted; but, although this has been most unquestionably the case, yet the arrivals have been so rare as not materially to have affected the constitution of the formation.

It must be noted that the extreme height to which the glacier of the Doe carried its porphyritic burden is 800 feet, an altitude which approximately corresponds to that to which the original patches or beds, from which the former were derived, attained; and that these blocks have in some cases travelled about four miles from their original position. In the instance of a few limestone and sandstone boulders, the distance may even be as much as seven to ten miles. Lower down the river, at a point one or two miles from Ingleton, are rounded masses of soft Red Sandstone, some of which may have been subjected to the action of the lower extremity of the combined glacier, but others are undoubtedly concretionary. The Red and Grey Dykes may possibly give evidence to the experienced eye of

some glacial action, the former being crossed obliquely and the latter longitudinally by the course of the respective glaciers, but the signs are doubtful, not that there is any lack of a manifestation of the rounding and smoothing of the rock, but the exact agent is uncertain and appears in a great measure to have been purely fluvial, whilst at the joints or veins, sometimes grooves, at others ridges, are conspicuous as the result of variation in the chemical agents, which in their turn have brought about the slow decomposition of the upper surfaces of the dyke.

As in the case of Crummack Dale on the south-eastern slopes of Ingleborough, so at Ingleton, a kind of Silurian ridge, which has interposed itself in the way of the glacier, may be observed about two miles above the village at this place, where the patches of green, porphyritic rock appear; here, however, the rocks are massive, or if showing indications of dip, denote it as only slightly deviating from the perpendicular, whilst above Austwick the dip of the beds is in a contrary direction and as much as 45° (N.E.) from the horizontal line. These two ridges are fine situations, in situ, for viewing the direct traces of glacial erosion; the rocks, especially in Crummack Dale, are in many parts reduced to an almost glassy smoothness, with traces of striation in various places, and so high is the polish that it is more easily detected by the foot than by the eye, as, when wet, it is dangerous for a person to walk upon the inclined surfaces.

The striation of the boulders at Norber is much more notable than at Ingleton, where the smoothing and rounding of the somewhat smaller masses is a stronger feature, speaking comparatively. At Ingleton the story told is not so limited to one place, is not so concentrated, but, perhaps, on the whole gives a fuller history of general glacial action. The Silurians of Crummack Dale are to a certain extent of a more impressionable character than those which have been the chief subject of erosion in the valley of the Doe, being of a somewhat calcareous composition, effervescing with H_2SO_4 , and not 'grits'—although occasionally flecked with mica—as they have erroneously been designated, yet sufficiently proof against the weather as to have retained their lines and furrows for a protracted period: they appear referable to the Coniston-Bala series, belonging to a portion of a fold of the contorted strata now lying beneath the Carboniferous beds somewhere about Chapel-le-Dale and Weathercote, the other portion having been removed prior to the Carboniferous era, with the exception of the lower part, now buried below Ingleton and stratigraphically above the Coniston limestone and shales here exposed, and appearing again in the inverted flexure of the duplicature above Austwick with these hard, calcareous Silurians actually overlying them.

If the view regarding the derivative nature of the green, porphyritic patches of stone found in the Dale, two miles above Ingleton—withstanding certain signs of concretionary bodies and weathering of inherent particles—be discarded, these masses of highly crystalline and coarse-grained rock may be regarded as a kind of boss of igneous formation, occupying the centre of the fold in the Silurians, which in the case of the Doe and Crummack valleys we find, either fully or in part, offering itself as an obstacle to the course of one or other of the glaciers that we observe in our mental vision traversing and grooving the glens of the ancient hills: but this leads us to something else, a total thickness of blue slates and hard non-fissile Lower Llandeiloës of 6,600 feet to 7,000 feet.

It is with some diffidence that certain views, here set forth, have been explained, when the ground has been so well explored by geologists already; yet the appearances are such as I have attempted to show them to be, whether the conclusions which one has been induced to form, as a result of their study, be sound or not; it may, however, be added that doubtless a much greater fund of valuable information may be culled from the deposits of the district than the few notes here set down, should such, as may take advantage of the hints given, endeavour more arduously to do a really valuable work for the geological brotherhood.

NOTE—BOTANY.

Varieties of *Viola odorata*.—In the neighbourhood of Tuxford, in Notts., the sweet violet is extremely abundant, and of great variety of colour; various shades of light blue are found occasionally, though rare; many are of a peculiar red, somewhat like the colour of the common red primrose—this is probably the variety mentioned in Ann Pratt's 'Flowering Plants of Great Britain,' where the following passage occurs: 'The Rev. W. T. Bree found this flower of a red colour at Castle Hill, Allersley, and on the mount of Warwick Castle.' Some years ago I sent several roots to Devonshire, where they increased rapidly, and no change of colour took place. These occur at the commencement of the violet season, when the blues are the most plentiful; afterwards the white violets are the most common, and with these appear flowers of a beautiful pearly-grey tint.—W. A. GAIN, Tuxford, Newark, Notts., April 18th, 1888.

BAKER ON FERN ALLIES.

Handbook of the Fern Allies: A Synopsis of the Genera and Species of the Natural Orders Equisetaceæ, Lycopodiaceæ, Selaginellaceæ, and Rhizocarpeæ. By J. G. BAKER, F.R.S., F.L.S., etc. London: G. Bell & Sons. 1887. Demy 8vo., pp. 159. Price 5s.

This work, the learned author's latest monograph, supplies a distinct want. Planned upon the same lines as Hooker and Baker's *Synopsis Filicum*, it supplies the systematist with a diagnostic guide to the whole known Fern-Allies,—the Horsetails, Club-Mosses, and Pillworts; and the two books now overview *all* the Vascular Cryp-

togams. In some of the genera the species are suggestively few in number. Of the Horsetails, for example,—an order gigantically in evidence in the carboniferous era—there are now only twenty known in the whole world, ten being British; a dying-out genus this one, clearly, under the conditions of historic times. Per contra, the work before us shows there to be 334 species of *Selaginella* (many beautiful though small in size), of which only one, *Selaginella spinosa*, is British, this being a latter-day order so to say, sub-tropical in its distribution for the great part, the product of some mysterious inscrutable environment to which modern science has not, as yet, found the key.

The fossil types of the Fern Allies are of course not included in this work, since they have gradually been fully dealt with by Prof. W. C. Williamson in the *Philosophical Transactions* from 1871 onwards, although truly, to quote the Preface, a study of these fossil types is quite needful to a correct understanding of their relations to one another and other plants; and there is an excellent general summary of what is known about them in a translation by Goebel, of the systematic portion of Sachs' Text-book amplified, recently issued from the Clarendon Press.

The orders and genera are as follow:—II. Equisetaceæ. One genus (*Equisetum*—20 species, 10 of them British). III. Lycopodiaceæ. Four genera. 1. *Phylloglossum* (1 species, Australasian). 2. *Lycopodium* (94 species, 6 British). 3. *Tmesipteris* (1 species, Polynesian). 4. *Psilotum* (2 species). IV. Selaginellaceæ. Two genera. 1. *Selaginella* (334 species, the first one only being British). 2. *Isoetes* (49 species, only two of the aquatic and one of the terrestrial forms, and none of the amphibious, being British). V. Rhizocarpeæ. Four genera. 1. *Salvinia* (13 species). 2. *Azolla* (5 species). 3. *Marsilea* (40 species, 2 European, none British). 4. *Pilularia* (6 species, 1 British).

Errors, of course, as in all that Mr. Baker does, are conspicuous by their absence; and but very few omissions of recently brought up names, etc., strike us. Wahlenberg's beautiful variety *capillare* of *Equisetum sylvaticum* does not appear to be considered worthy of notice. Misprints and printer's errors are few, though there is a rather funny one in the (as often happens) larger conspicuous type of the Preface—'amplification' in place of 'amplification'; and Kuhlwein's *Equisetum litorale* is usually spelled with a single, not a double, t. Under species No. 26 on page 40, the surname 'Spruee' should be 'Spruce.' These are points indeed; that they are the only ones the reviewer can find to descant upon is, perhaps, the highest praise that could be given to a work that from cover to index (which is full), alike in matter, type, and get-up, is both sightly and good.—F. A. L.

NOTES ON THE OCCURRENCE OF PALLAS' SAND-GROUSE IN THE SPURN DISTRICT IN THE SPRING OF 1888.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

THE Sand-Grouse (*Syrnhytes paradoxus*) were first seen by Mr. Philip Loten and his father on Kilnsea Warren, on May 18th, at about 4.30 p.m.—wind S.E. (4)—four birds travelling overhead, and within easy gunshot. They came from the direction of the sea on to the Warren. At the same time, between four and five o'clock, C. Hopper, near Spurn Lighthouses, saw five arrive in the same manner, and pitch near the chalk embankment on the Humber side. In the afternoon of this day Mr. Sergeant, of Welwick, saw a covey of twenty on his farm in that parish (these were also subsequently seen by others); and at the same date also, a single male bird was obtained at Irby, six miles south-west of Grimsby, in Lincolnshire. This, I subsequently found, was one of three, shot from a small band of five, by a boy who was employed in tenting birds, on the Wold. I rescued it some days afterwards by chance, the other two having been plucked and eaten. These four separate occurrences mark their time of arrival very clearly on the 18th of the month. Mr. F. Boyes, who has been at much pains to ascertain the number visiting Flamborough, informs me that they also arrived there on the 18th.

A flight of twenty was seen near the Spurn Point on the 22nd, and another of twelve on the 23rd, about thirty near Kilnsea Warren, on the 24th; and on the 25th C. Hopper, of Spurn, states that he saw about the same number flying directly south—probably these may have been the same flock seen on the previous day. A considerable number also, from a single bird to five, have been seen at various times, between the 18th and 26th, in the parishes of Kilnsea, Easington, Skeffling, and Welwick, all near the Spurn. No doubt flocks have been seen more than once, so I have endeavoured to mention only those in which the evidence appears sufficient to indicate separate and distinct occurrences. One, a male bird, was shot from four on Swallow Wold, near Caistor, Lincolnshire, on May 23rd; and on the 26th I saw two small bands, of four each, rise from the sea side of the Spurn sand-hills, between Kilnsea and the Point.

Exclusive of the two Lincolnshire birds, seven were shot between the 18th and 26th; of these five are males and two females. Also, another, a female, was washed up opposite to Easington. This had

the scalp partly separated from the skull, probably having come in contact with the coast telegraph-wire, fallen into the sea, and subsequently washed up by the tide.

The number of Sand-Grouse actually arriving at the Spurn may be estimated at about seventy, but I admit this may be considerably below the mark ; when flights are seen in so many places it is impossible to give more than an approximate estimate of their number.

Two which I saw in the flesh, said to have been shot by a farmer at Easington, on the 26th, were both males. One of these had the lateral or outside rectrices the natural length, but the intermediate feathers were only about one-half the length, and without any trace of the two long filamentous ends.

These Sand-Grouse flew very straight and direct, and with extraordinary velocity. Their long sharply-pointed wings and tail are suggestive of rapid dashing flight, and the whole contour of the bird seen on the wing seems a model of grace and restless activity. Their small daintily-shaped head and dark-hazel eye are also very pleasing features. In flight, with a bright sunlight, they have quite a pink or rosy appearance, and the dark markings, or belt, on the abdomen and flank may be seen at a great distance. Their flight has been compared to that of the golden plover, but it struck me as more resembling that of driven grouse when in full swing. The four birds which, on the 26th, rose from the sand-hills, flew high and with great rapidity out to sea in a straight line for more than a mile ; then, with the glass, I saw them make an immense circuit, apparently shaping their course for the Point, two miles away to the south. The second lot of four rose suddenly beyond a bank of tide-tossed sea-weed, and flew directly out to sea, till they became invisible in the extreme distance.

I found places in the sand-hills where flocks had evidently been basking or dusting like partridges. All round were the rat-like paddings of their small flat feet, and numerous holes scratched or excavated in the loose sand, sufficiently deep to hold the whole of their body. As a man remarked, who had flushed them, they appeared to rise *out of the sand*, and not from the surface. Another said, 'they came from holes in the sand like rats.'

The crop of one from Spurn on the 19th was crammed with wheat and linseed, washed to shore in the last winter from a wreck near Hornsea. The gizzard of another, shot near Patrington on the 21st, I found filled with numerous small, dark, flinty fragments and turnip seed. The crops and gizzards of three males shot on the 26th contained a large amount of small agricultural seeds, as red and white

clover, trefoil, Italian rye-grass, a few barleycorns, and some seeds of weeds, as the common dock ; also fragments of the leaves of the white clover plant. The gizzards also contained many small sharp fragments of white quartz.

The call-note I only heard once, and then indistinctly ; it was a loud guttural cluck, and I put it down as resembling the word '*cur-ruck*.' Those who have had better opportunities of hearing it at Spurn compare it to the call-note of the turnstone. Colonel Prjevalski says that in the air the male birds utter a peculiar note, like '*truck-turuck, truck-turuck*,' especially when in small flocks, and this probably will be found as closely to resemble their call as anything that can be given on paper.

In a freshly-killed bird the iris was dark hazel, the beak lavender-grey, darker at the tip. The parasite of the Sand-Grouse is the largest I have seen on any species—it is a huge acarid. Two examples, taken from the head of a male bird, have been sent to the Rev. O. Pickard-Cambridge for determination.

The Sand-Grouse which have reached the East coast of England, as far as can at present be ascertained, represent but a very small proportion of the 'great horde' which, from May 8th to the 25th, passed Heligoland, and it is fair to presume that the main body of this Tartar host swept onward in a south-westerly direction along the coast-line of Europe, in which case we may expect to hear of them again in some parts of France. That any should have visited our shores is the more remarkable when we consider that they not only started, but persistently followed up for some hundreds of miles, a line of flight which, in their case at least, was across an unknown sea, and might, for anything they knew to the contrary, have been an Atlantic. Perhaps, however, experiences gathered in crossing the waters of their own Caspian proved all-sufficient for their purpose.

May 31st, 1888.

OCCURRENCES OF PALLAS' SAND-GROUSE AT HELIGOLAND.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

IN a letter dated the 25th of May, Mr. Gätke has given me the following dates of the occurrence of the Sand-Grouse (*Syrhaptes paradoxus*) at Heligoland.

'May 8th, twelve birds ; 13th, a score ; 14th, some ; 15th, some ; 16th, flights from five to twenty—twenty-five shot ; 17th, 1.—, early this morning, on Sandy Island, shot eighteen ; 18th, flights
July 1888.

from twenty to two hundred head ; 19th, a few ; 20th, small flocks, from five to twenty ; 21st, fog, none seen ; 22nd, hundreds, many females ; 23rd, flocks from ten to forty ; 24th, many great flights, from fifty to one hundred ; 25th, many flights from five to twenty—very cold northerly wind blowing rather fresh.

‘ This is principally to tell you to look after the birds in sandy, gravelly places, the flat beach at foot of the sand-dunes, like our Sandy Island ; on the top of our cliff, the cultivated ground, they are met with in far less proportion, not ten to one hundred. To see the birds when squatting on ground composed of sand, stones and some dry seaweeds, is scarcely possible—and they know this well, because they lay so close.

‘ What flyers they are ! They beat all we ever have seen here.’

THE IRRUPTION OF PALLAS' SAND-GROUSE.

Denmark.—In 1863 comparatively large flocks of this interesting bird settled in Denmark in the neighbourhood of Ringkjóbing, where it built and lay, but the eggs being collected, many eaten, others procured for public and private collections, disturbed the bird so that it did not have the peace and protection requisite to encourage it to settle down and breed.

This year, 1888, it has appeared here again ; the first I saw was one that had killed itself by flying against the telegraph wires near Assens in Fünen on the 1st of May, and since that date they have been observed in flocks in various districts over the country. Last week a large flock of over one hundred were seen in the neighbourhood of Thisted in North Jutland, Denmark. Its Danish name is Steppehönen.—J. S. Wood, Nyborg, Denmark, June 19th, 1888.

Flamborough, Yorkshire.—Friday morning, June 15th—Fifty in a flock were seen flying in a westerly direction. Several flocks, from ten to twenty in a flock, seen at a radius of twenty miles from the Headland. One found dead on the beach, probably fallen in the sea and washed on shore. A gentleman farmer also picked up one in his field minus its head ; another one found wounded, no doubt it had been in contact with the telegraph wires. From the reports, a great many have been shot to preserve. I have had several sent in for that purpose.—MATTHEW BAILEY, Flamborough, June 18th, 1888.

Since writing to you on the 18th, several more flocks of Pallas' Sand-Grouse have been seen on the Headland.—MATTHEW BAILEY, Flamborough, June 22nd, 1888.

Whitby, Yorkshire.—On the 28th May last, two (a male and female) out of a flock of about twenty Sand-grouse were shot at Carr Hill, near Whitby, whilst feeding on some clover; the female, which I saw in the flesh, has been preserved by Mr. J. H. Wilson of this town, who found the crop full of clover. It is exactly a quarter of a century since the specimen in our local museum was shot when in company with three others feeding on recently-sown barley at Newholm near Whitby, viz., May 1863.—THOMAS STEPHENSON, 1, Haggarsgate, Whitby, June 18th, 1888.

Pickering, Yorkshire.—It may be of interest to know that the Sand-Grouse have reached the neighbourhood of Pickering. A lot of ten birds was seen on Allerston Warren Farm on Sunday, 3rd June; and again on Tuesday, the 5th June, by another observer, ten or twelve were seen near the same spot, most probably the same birds. The birds were seen on my brother's farm here by his foreman hind on the first occasion, and by two of the men on the second. I think they had taken their departure on the Tuesday, as I had a long look for them that day and on the two following days without seeing anything of them. The foreman, who is a keen observer of natural history subjects, had a close and long observation of the birds, and gave me a capital description of them, which left no doubt as to their identity.—HERBERT PRODHAM, Allerston, near Pickering, June 12th, 1888.

Nidderdale, Yorkshire.—On the 8th June (Friday) I received a letter from Mr. Wm. Smorfitt of Darley, Ripley, Yorks., regretting that he had not seen me on the previous Wednesday, as he had shot two birds and did not know what they were, but he was having them preserved. I wrote him by return, suggesting that they were probably Sand-Grouse, and giving him a description of the bird. In reply he wrote—‘The two birds I shot are undoubtedly what you have described, Sand-Grouse. Five were on some oats and tares sown with clover and hay seeds in a field near the dam. From their note or scream I could imagine I saw one near the dam two years ago.’ The ‘dam’ he alludes to is on the edge of the moors, and in his former letter he told me he shot the two birds not very far away from it.—RD. PAVER-CROW, Ornham's Hall, Boroughbridge, June 10th.

NOTE—LEPIDOPTERA.

Hermaphroditism in the Emperor Moth.—At the meeting of the Entomological Society of London, on May 2nd, 1888, Dr. Philip Brooke Mason, F.L.S., exhibited an hermaphrodite specimen of *Saturnia carpinii* from Lincoln.—H. GOSS, Hon. Secretary.

July 1888.

SPARGANIUM RAMOSUM VAR. MICROCARPUM IN YORKSHIRE.

P. FOX LEE,

*Secretary for Phanerogamia to the Botanical Section of the Yorkshire Naturalists' Union;
President of the Dewsbury Naturalists' Society; Member of the Botanical Record Club, etc.*

WHEN Mr. W. H. Beeby a few years ago demonstrated to the botanical world that *Sparganium neglectum* was no longer confined to the Continent only, but was a true British species, many gatherings of what had hitherto been regarded typical *Sparganium ramosum* were sent to him from all parts of the country with the hope that the new segregate (*S. neglectum*) might be detected amongst them.

During last autumn I found a new patch of *Spargania* (for the Dewsbury district) in the marshy corner of a small thicket near Bretton in S.W. Yorkshire, only a few miles from Dewsbury, the form of whose fruit (i.e. each *drupe* in the globose heads) seemed to approach the new segregate, and I sent some specimens labelled *Sparganium neglectum*, Beeby, to the Watson Bot. Exch. Club.

Mr. Arthur Bennett, one of the Club's referees, submitted them to Mr. Beeby, who states in the Fourth Annual Report, 1887-8, p. 13, of the Watson Club recently issued, that my gathering is not *S. neglectum*, but a var. of *S. ramosum* called *microcarpum* of Neumann. Mr. A. Bennett, in a letter just received, says:—'The var. of *Sparganium ramosum* is a continental one, not yet in our manuals; it will be published in a Swedish Monograph of the Order separately, and conjointly with the new edition of Hartmann's Handbook of the Scandinavian Flora (ed. 12). It is the form of *ramosum* that is (!) continually mistaken for *neglectum*.'

NOTES AND NEWS.

It is a pleasure to geologists, not only in Yorkshire but throughout the country, to hear of the birth of another geological society, namely, at Hull. Hitherto, Leeds only in Yorkshire has possessed a local society established purely for the study of geology; now it has a friendly rival at Hull. Long may they co-operate and flourish! It would appear that from the good work the Leeds Association has done throughout Yorkshire, the 'golden opportunities' of its members have been envied; hence a desire that in the large and prosperous borough of Hull, so well placed in many ways for the study, an association of this nature should be formed. This is now an accomplished fact, as a week or two ago a preliminary meeting of gentlemen interested in the science was held, at which the society was constituted, and the first officers elected. The executive are:—President, Dr. F. F. Walton; vice-presidents, the Rev. E. Maule Cole, M.A., Mr. W. Hunt (editor of the 'Eastern Morning News'), and Dr. J. Walton; secretary, Mr. J. W. Stather; treasurer, Mr. W. Dixon; committee, Messrs. J. Stears, E. A. Peake, J. Carter (late of Leeds), M. Carmichael, and G. Silabon.

Naturalist,

NOTES ON THE BIRDS OF THE LAKE DISTRICT.

JOHN WATSON,
Fern Leigh, Kendal.

Greenland Falcon (*Falco candicans*).—So far as I have been able to make out, only a single bird of this species has occurred in the Lake District. This is an adult male, and is now in the collection of the late Sir Richard Musgrave, Bart., at Edenhall. It was shot near Crosby Ravensworth, in Westmorland, about 1864, and is a beautiful creamy-white individual, exhibiting the characteristics of the Greenland race of Jer Falcons. In a privately-printed note kindly sent me, Mr. J. G. Goodchild has put the occurrence of this specimen upon permanent record, as also that of the Iceland Falcon below. These notices are each illustrated by a woodcut of the bird they describe.

Iceland Falcon (*Falco islandus*).—An immature female Iceland Falcon was shot by Mr. John Dodd, at Winton, Westmorland, about 1842. Mr. Goodchild says that when first seen the bird was perched upright on a wall, and so intent was it upon the doings of some magpies and other birds, that it was approached without difficulty and shot.

A second occurrence of this bird was that of a female, shot near Cross Fell, on the 13th October, 1860. This specimen was preserved by Mr. Blackett Greenwell, of Alston, who still retains the bones and some of the wing feathers of the bird (Duckworth, in Trans. Cumb. and West. Assoc., No. viii, p. 206).

Peregrine Falcon (*Falco peregrinus*).—The Peregrine is the largest of our resident Falcons, and though much more rare than formerly, is still by no means extinct. From our note book we learn that at one time and another there have been not less than seventeen nesting-places of the Peregrine in the Lake District, about half of which number we have visited. To these the birds return year after year, and do not leave unless much persecuted. The breeding sites are invariably among the rocks of the crags, and generally in the most precipitous and inaccessible parts. Peregrines are early breeders, and usually have young by the middle of April. These the shepherds and dalesfolk are careful to destroy whenever practicable, from a mistaken notion that the 'big blue hawk' is injurious to the lambs of the fell sheep. We have known two instances in which the Peregrines had their nest in close proximity to that of a Raven—in one case

within thirty feet, and this continued year after year. On the Lake mountains the prey of the Peregrine consists of golden plover, grouse, ring-ouzel, and the water-fowl that stay by the tarns. When it descends to the valleys, ringdoves, rabbits, leverets, and the larger thrushes constitute its chief food; though, in autumn and winter this is more varied. At these times we have, in addition to the resident birds, those which appear on migration, and which are usually seen about the low-lying mosses and marshes. Here they feed upon shore-haunting birds, especially dunlins.

NOTES FROM THE SPURN IN THE SPRING OF 1888.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Ring-Ousel (*Turdus torquatus*).—May 6th. A fine old cock bird, now in my possession, was picked up dead near Easington. There was, I am told, a very great immigration of the species in the first week in May, at Kilnsea, and as many as twenty were seen in one field.

Wryneck (*Iynx torquilla*).—One, a male, was obtained near Kilnsea in the spring. The Wryneck may be considered one of the rarest visitors to the Spurn district.

Hoopoe (*Upupa epops*).—One, a female, was found dead near Easington, on May 11th. It had been observed in the neighbourhood for two or three days previously.

Dotterel (*Eudromias morinellus*).—A small trip of eight were seen in a field between Easington and Kilnsea, on the 25th.

Bartailed Godwit (*Limosa lapponica*).—I did not see any on the Lincolnshire side of the Humber in May. At Spurn, however, they were very numerous on the sands near Kilnsea throughout the month. Also, unusual numbers of Oystercatchers (*Haematopus ostralegus*) and Curlews (*Numenius arquata*).

Shelduck (*Tadorna cornuta*).—I was very pleased to find three pairs of these nesting on the Kilnsea Warren, and another pair nearer the Point. They were extremely tame, continuing to feed when I stood within thirty yards and watched them through a glass, and it was difficult to realise that they were really wild birds.

June 1st, 1888.

Naturalist,

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COLEOPTERA, 1884, 1885, 1886, 1887.

- ANON. [not signed]. Yorkshire.
Leeds Naturalists' Club and Scientific Association [*Clytus arietis*, *Cicindela campestris*, and *Pyrochroa coccinea* in Nidderdale]. Nat., June 1884, ix. 197.
- ANON. [signed B. B. L. T.]. Yorkshire.
[Carabus violaceus at York, and Cicindela campestris at Strensall and Langwith]. Nat. Hist. Journ., May 15, 1886, x. 80.
- [T. R.] BILLUPS. Lincolnshire.
[Agapanthia lineatocollis Don., from Lincoln, exhibited to South London Ent. Soc., Feb. 4th, 1886]. Ent. Mo. Mag., March 1886, xxii. 242; Ent., March 1886, xix. 71.
- [T. R. BILLUPS.] Lincolnshire, Durham.
[Meligethes exilis Sturm, and Anthicus schaumii Wool., from Lincoln; Hydnobius perrisi Fair., Mycetoporus nanus Grav., and Omalium rugulipenne Rye, from Hartlepool; all exhibited to South London Ent. Soc.]. Ent. Mo. Mag., April 1886, xxii. 267; Ent., April 1886, xix. 94. [Subsequent notes in Ent. Mo. Mag., xxiii. 24; and Ent., July 1886, xix. 191, state that the *Meligethes* and *Anthicus* were not from Lincoln, as the record implies.]
- W. G. BLATCH. Nottinghamshire.
Teredus nitidus, F., Rhyncolus gracilis, Rosen., &c. [viz., *Dryocates villosus*, *Eutheia clavata*, *Elatер coccinatus*, and *Ptenidium gressneri*], in Sherwood Forest [details of captures and habitat given]. Ent. Mo. Mag., July 1884, xxi. 36.
- W. G. BLATCH. Yorkshire, Nottinghamshire.
Notes on the British Species of the Genus Euplectus, including a description of *E. nubigena*, Reitter, a species new to Britain [taken in Sherwood Forest, May 1884 and Sep. 1885; records also of *E. duponti* Aubé, Scarborough, R. Lawson; *E. punctatus* Muls., *E. karsteni* Reich., *E. signatus* Reich., *E. nanus* Reich., *E. nigricans* Chaud., *E. sanguineus* Denny, and *E. bicolor* Denny—all from Sherwood Forest; and *E. minutissimus* Aubé, Repton, 1879; details of capture given in several cases]. Ent. Mo. Mag., Feb. 1886, xxii. 203-209.
- W. G. BLATCH and A. C. HORNER. Nottinghamshire.
An Entomological Trip to Sherwood Forest [in mid-Oct. 1886; numerous species recorded]. Ent. Mo. Mag., Feb. 1887, xxiii. 212-213.
- W. G. BLATCH. Nottinghamshire.
Coleoptera in Sherwood Forest [in Sep. 1885; six species mentioned; and in June 1886, eight species]. Ent. Mo. Mag., Dec. 1887, xxiv. 155.
- GEORGE BOLAM. Northumberland.
On the Occurrence of the Cockchafer (*Melolontha vulgaris* Fab.) in Northumberland [rarely seen in the district; instances cited]. Proc. Berw. Nat. Club for 1886 [pub. 1887], xi. 558.
- BRADFORD NATURALISTS' SOCIETY. Cumberland, Westmorland, Yorkshire.
[Reports of Meetings, with notices of occurrence of Coleoptera in Cumberland, Westmorland, and Yorkshire]. Nat., Jan., June, and July 1884, ix. 106, 196, 214.

BRADFORD NATURALISTS' SOCIETY.

Yorkshire.

Diary of Natural History Observations for 1884, pp. 29 [including some notes relating to beetles].

J. W. CARTER.

? Yorkshire.

Coleoptera [capture of *Cychrus rostratus* and *Othius fulvipennis*, presumably near Bradford]. Young Nat., March 1884, v. 95.

[A. J. CHALKLEY.]

Yorkshire.

[*Meloë violaceus* near Sheffield, female]. Nat. Hist. Journ., June 15th, 1886, x. 102.

JOSEPH CHAPPELL. Northumberland, Isle of Man, Lancashire, Cheshire, Yorkshire, Cumberland, Derbyshire, Nottinghamshire.

Obnoxious and Injurious Insects [*Sphodrus leucophthalmus*, *Carpophilus mutilatus*, *Læmophilæus pusillus*, *Anommatus 12-striatus*, *Dermestes vulpinus*, *D. lardarius*, *Ptinus sexpunctatus*, *Gibbium* (species undetermined), *Anobium domesticum*, *Xestobium tessellatum*, *Ptilinus pectinicornis*, have North of England localities assigned to them; numerous other species are mentioned in a general manner]. Young Nat., April 1887, viii. 65-69. [*Blaps sulcata*, *Hypophlæus depressus*, *Tenebrio obscurus*, *T. molitor*, *Bruchus pectinicornis*, *B. rufimanus*, have Northern localities cited]. Young Nat., May 1887, viii. 92-94. [The next instalment treats of Wood- and Bark-feeding Insects: *Nemosoma elongata*, *Sinodendron cylindricum*, *Lymexylon navale*, *Hylecæus dermestoides*, *Priobium castaneum*, *Ptilinus pectinicornis*, *Ochina hederæ*, *Bos-trichus capucinus*, *Phlwotrya stephensi*, and *Hyllobius abietis* referred to from specified localities in the North]. Young Nat., June 1887, viii. 98-102. [*Pissodes notatus*, *Cryptorhynchus lapathi*, *Hylastes trifolii*, *Hylurgus hederæ*, *Scolytus pruni*, *S. intricatus*, *Trypodendron domesticum*, *T. quercus*, *Dryocæus bulmeringui*, *Tomicus sexdentatus*, *T. acuminatus* referred to from precise localities]. Young Nat., Aug. 1887, viii. 155-159. [*Callidium variabile*, Sherwood Forest; *Chytus arcuatus*, Newcastle and Cumberland; *Monohammus sator* and *M. sutor*, frequent about Manchester; *Astinomus ædilis* at Astley deep pit, Dukinfield; *Superbia scalaris*, several places about Manchester cited; *Stenostola ferrea*, Dunham Park, its only locality, referred to]. Young Nat., Sep. 1887, viii. 168-171. [*Rhagium bifasciatum* at Staly-brushes; *Pachyta cerambyciformis* near Manchester, and *Strangalia quadrifasciata* in Sherwood Forest]. Young Nat., Oct. 1887, viii. 200-201. [*Grammoptera atra*? at Castle Mill, on *Umbellifera*]. Young Nat., Nov. 1887, viii. 211.

TOM DUCKWORTH.

Cumberland.

[**Scarcity of *Melolontha vulgaris*** in Carlisle district]. Trans. Cumb. and Westm. Ass., No. xii. (1886-87, pub. 1887), p. 98.

JOHN W. ELLIS.

Yorkshire.

Hibernation of *Cetonia aurata* [in April 1884, Dr. Ellis received one alive, which had been captured in the thatch of an old house at Helmsley; Editors append a note that there is little doubt that it assumes the perfect state in the autumn, but does not emerge till the year following, except a few brought out by an autumnal 'burst' of hot weather]. Ent. Mo. Mag., July 1884, xxi. 36.

JOHN W. ELLIS.

Yorkshire.

***Amara fusca*, Dj., at Doncaster** [A male specimen found under stones in August 1884, together with a number of *Pterostichus vulgaris* and *Harpalus ruficornis*]. Ent. Mo. Mag., Oct. 1884, xxi. 112.

J. W. ELLIS.

Cheshire.

***Ægalia rufa*, Fab. [captured at Wallasey Sandhills, June 2nd]**. Ent. Mo. Mag., Aug. 1885, xxii. 62.

J. W. ELLIS.

Cheshire, Lancashire, Yorkshire.

Coleoptera for beginners. [*Carabus nitens* used to occur plentifully at Southport; and *Nebria livida* occurs abundantly in crevices of the clay cliffs at Scarborough]. Young Nat., Oct. 1885, pp. 19 and 20 of Appendix.

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[*Metabletus foveola* very common about Liverpool; *Oodes helopioides* taken near York by Mr. Smedley]. Young Nat., Nov. 1885, Appendix, pp. 25 and 29. [*Amara spinipes* used to be taken freely on thistle-flowers near Liverpool by F. Kinder]. Young Nat., Dec. 1885, p. 39 of Appendix. [*Cilenum laterale*, habitat in Liverpool district stated]. Young Nat., Feb. 1886, p. 49 of Appendix.

J. W. ELLIS.

? Lancashire or Cheshire.

Apion annulipes Wenck. [near Liverpool, a male]. Ent. Mo. Mag., April 1886, xxii. 266.

JOHN W. ELLIS.

Cheshire.

Homalium rugulipenne, Rye [and three Aphodii], at Wallasey. Ent. Mo. Mag., June 1886, xxiii. 16.

JOHN W. ELLIS.

Lancashire, Cheshire.

Entomological Localities near Liverpool [a most valuable and useful paper, dealing with the lepidoptera and coleoptera which occur on the Lancashire coast sand-hills, at Wallasey sand-hills, at Bidston Hill, and on Simmonswood Moss; very numerous species cited with notices of their numbers and habitats]. Ent. Mo. Mag., Aug. 1886, xxiii. 57-63.

E. A. F[ITCH].

Cheshire.

The Willow Beetle [*Phratora vulgatissima*] at Lymm [, Statham, Thelwall, and other localities in Cheshire; great damage done amongst the extensive willow-beds]. Ent., Oct. 1884, xvii. 239.

W. W. FOWLER.

Derbyshire.

The Genus Ceryon [; in this useful paper the only North Country record given is: *C. obsoletus* Gyll. ('I believe, near Burton-on-Trent')]. Ent., March 1884, xvii. 54-59.

W. W. FOWLER.

Derbyshire, Yorkshire, Northumberland.

The Genera Hydrochus, Octhebius, and Hydræna [the North of England records given are: *Hydrochus brevis* Herbst. (of late years has occurred in the North of England); *H. elongatus* Schall. (Askham Bog, York); *Octhebius rufimarginatus* Steph. (Repton; Scarborough); *Hydræna palustris* Er. (Askham Bog); *H. angustata* Sturm. (the Wansbeck, Wallington, Northumberland); *H. nigrita* Germ. (North of England); *H. atricapilla* Wat. (Scarborough; the Wansbeck, Northumberland); *H. pygmæa* Wat. (Scarborough; the Wansbeck, Northumberland); *H. pulchella* Germ. (Scarborough; Derbyshire; the Wansbeck)]. Ent., July 1884, xvii. 156-163.

W. W. FOWLER.

Lincolnshire.

Captures of Coleoptera near Lincoln [at Langworth Wood, where numerous Beetles (47 species) noted; other notes of this season for Nocton Wood and other places near Lincoln given]. Ent. Mo. Mag., Dec. 1884, xxi. 162.

W. W. FOWLER.

Cheshire.

Tachys parvulus, Dej., a species new to Britain [taken on the Wallasey sand-hills in Sep. 1884, by J. H. Smedley; full descriptions given]. Ent. Mo. Mag., July 1885, xxii. 43-44; and Proc. Ent. Soc. Lond. Nov. 4th, 1885, p. xxvii.

W. W. FOWLER.

Lincolnshire.

Agapanthia lineatocollis, Don. [at Langworth Wood] near Lincoln. Ent. Mo. Mag., Aug. 1885, xxii. 61-62.

Northumberland, Lincolnshire, Nottinghamshire,
Derbyshire, Lancashire, Cheshire, Yorkshire.

W. W. FOWLER.

The Nitidulidæ of Great Britain [the Northern notes are: *Cercus bipustulatus* Payk., Nocton near Lincoln, beaten in some numbers from *Carex paniculata*; also found on *Spiræa*, and has occurred in *Cossus* burrows in Sherwood

Forest (p. 57); *Carpophilus mutilatus* Er. (p. 58), taken by Mr. T. R. Hardy of Manchester, very commonly at the bottom of old wheat-stacks in his neighbourhood. He has also taken it at Sherwood Forest in *Cossus* burrows, which fact goes a long way towards establishing its claim to be regarded as indigenous]. Ent. Mo. Mag., Aug. 1884, xxi. 54-58. [*Epuræa decemguttata* Fab., Dunham Park near Manchester, and Sherwood Forest (p. 93); *E. diffusa* Brisout, Mr. Chappell has taken at sap of oak exuding from *Cossus* burrows in Dunham Park, with *E. 10-guttata*; and Mr. Reston has taken it at Stretford near Manchester (p. 95); *E. melina* Er., Bowdon near Manchester; Amberley; Bretby near Repton (p. 94); *E. oblonga* Herbst., Dunham Park, in cracks of Scotch fir, Mr. Chappell (p. 95); *E. florea* Er., Robin's Wood, Repton; Mr. Reston has taken it on Chat Moss, on umbelliferous plants (p. 96); *E. deleta* Er., very common in fungi, especially boleti, near Lincoln, where it generally occurs in company with *Gyrophæna* (p. 96); *Epuræa parvula* Sturm, 'A very local species, but somewhat plentiful where it occurs; I have found it in numbers in Sherwood Forest with Mr. Matthews, by shaking faggots over a sheet, also a smaller variety by beating faggots of a species of *Tilia* (called 'bass' by the country people) in Langworth Wood, near Lincoln; Stretford, flying over old wood-yard, Mr. Reston; . . . ; also taken near Scarborough' (p. 97); *E. immunda* Er., very rare species; has been taken at Scarborough by Messrs. Wilkinson and Lawson (p. 97); *E. variegata* Herbst., very rare; Scarborough, etc. (p. 97); *E. obsoleta* Fab., 'Dunham Park, Manchester, under chips in the midst of exuding sap' (p. 98); *E. angustula* Er., 'very rare; Scarborough, Mr. Lawson and Mr. Wilkinson; . . . ; one specimen under bark of beech in Dunham Park, Mr. Chappell; Mr. Reston has taken it by sweeping on Chat Moss' (p. 98)]. Ent. Mo. Mag., Sep. and Oct. 1884, xxi. 92-98. [*Microrurula melanocephala* Er., I have beaten from wild cherry blossom in early spring, at Foremark, near Repton (p. 142); *Omosiphora limbata* Er., Nocton, Repton, etc. (p. 142); *Nitidula flexuosa* Fab., very rare and doubtful as British; Scarborough, Mr. Lawson; Northumberland, Mr. Bold; very probably imported with hides or bones; Mr. Bold himself considered his species taken near Newcastle-on-Tyne to have been not truly indigenous (p. 144); *S. punctatissima* Ill., Dunham Park, Manchester, in oaks and alders, Mr. Chappell (p. 145); *S. grisea* L., Stretford, Manchester, under bark of old apple-trees, Mr. Reston; Prestwich, under bark of alders near *Cossus* burrows, Mr. Chappell; I have beaten it from hawthorn blossoms near the banks of the Trent at Repton, and in Bretby Wood near the same place, and have also taken it in flood-refuse (p. 145); *Omosia depressa* L., a local species, common in the North of England . . . ; North Derbyshire (p. 147)]. Ent. Mo. Mag., Nov. and Dec. 1884, xxi. 142-147. [*Meligethes lumbaris* Sturm., Repton (p. 217); *M. fulvipes* Bris., Askham Bog (p. 218)]. Ent. Mo. Mag., Feb. and March 1885, xxi. 213-219. [*Meligethes difficilis* Heer., Manchester, Lincoln, and Repton (p. 261); Var. *kunzei* Er., Repton (p. 261); *M. morosus* Er., Repton (p. 262); *M. memnonius* Er., Repton, Chat Moss (Mr. Chappell), (p. 262); *M. viduatus* Sturm, Mablethorpe, on *Galeopsis tetrahit* var. *versicolor* at Chat Moss, Mr. Chappell, and occurs commonly in Langworth Wood near Lincoln, on *Ajuga reptans*, and by general sweeping, and also on strawberry flowers in author's garden, Lincoln (p. 264); *M. pedicularius* Sturm, occurs to author commonly on the same plants and in the same localities in and near Lincoln as the last-mentioned (p. 264); *M. ovatus* Sturm, Chat Moss, flowers of *Galeopsis* (p. 266); *M. flavipes* Sturm, on broom near Lancaster]. Ent. Mo. Mag., April 1885, xxi. 260-267. [*Meligethes symphyti* Heer. on *Galeobdolon luteum*, near Bowdon, Manchester, Mr. Chappell; Studley Royal, Yorkshire, Mr. Waterhouse (p. 33)]. Ent. Mo. Mag., July 1885, xxii. 33-36. [*Meligethes erythropus* Gyll., abundant in Langworth Wood near Lincoln, on *Potentilla tormentilla*, and sparingly on strawberry flowers in author's garden at Lincoln; Repton and Chat Moss; and Castle Mill, near Manchester, on *Galeobdolon luteum*, Mr. Chappell (p. 69); *M. exilis* Sturm, Isle of Man, Rev. R. P. Murray (p. 70); *M. brevis* Sturm, and its var. *mutabilis* Rosenh., on *Helianthemum vulgare* at Scarborough, where the type is rare, only one or two—out of a series of nearly

forty—showing no trace of the red spot which characterizes the variety (p. 71); *Cryptarcha strigata*, Dunham Park, Manchester, and author has taken it by sweeping in Bretby Wood near Repton (p. 73); *C. imperialis*, Dunham Park (p. 73); *Ips quadriguttata* Fab., Ripon, Manchester (p. 73); *I. quadripunctata* Herbst., under oak chips where the trees have recently been cut down, near Manchester, and in fungi on Chat Moss (p. 74); *Pityophagus ferrugineus* Fab., Northumberland, Dr. Power (p. 74); *Rhizophagus cribratus* Gyll., Stretford, Mr. Reston; on decayed roots of lime-trees, Withington Common near Manchester, Mr. Chappell; Studley Park, Ripon, in fungus, G. R. Waterhouse (p. 75); *R. parallelocollis* Er., once taken by late Archdeacon Hey in numbers near York in fungus in company with *Atomaria fimetarii* (p. 76); *R. nitidulus* Fab., Sherwood Forest, Dr. Power (p. 77); *R. dispar* Gyll., Newcastle; under bark of pines and in fungus growing on decayed trees, Chat Moss, Dunham, etc., Mr. Chappell; under poplar bark, Stretford, Mr. Reston (p. 77); *R. politus* Hellw., Manchester; and Stretford, Mr. Reston (p. 78).] Ent. Mo. Mag., Aug. and Sep. 1885, xxii. 69-78.

W. W. FOWLER.

Yorkshire.

Coleoptera at Tenby [refers to *Cassida hemispharica*, of which the only other specimen the author ever met with was at Filey, Yorkshire]. Ent. Mo. Mag., Nov. 1885, xxii. 139.

W. W. FOWLER.

Yorkshire, Derbyshire.

Harpalus calceatus, Sturm, re-established as British, with notes on other *Harpali* [captured at Bridlington when searching for *Nebria livida*; reference also made to once capturing upwards of two hundred *H. rufibarbis* at Repton from a spot a foot square]. Ent. Mo. Mag., Jan. 1886, xxii. 172-174; also see Proc. Ent. Soc. Lond., 1886, p. iii; Ent., March 1886, xix. 70; and Young Nat., March 1886, vii. 53.

Northumb., Durham, Yorksh., Lincolnsh., Notts., Derbysh.,

W. W. FOWLER.

Cheshire, Lancash., Westm., Cumb., I. of Man.

The Coleoptera of the British Islands. A Descriptive Account of the Families, Genera, and Species indigenous to Great Britain and Ireland, with notes as to Localities, Habitats, etc. [many relating to the Northern Counties]. Vol. i. Adephaga—Hydrophilidae. . . . 1887 [8vo., pp. 270.]

W. W. FOWLER.

Lincolnshire.

Tachinus elongatus, Gyll. at Lincoln [running on a pavement in the city, June 1887]. Ent. Mo. Mag., July 1887, xxiv. 46.

W. W. FOWLER.

Yorkshire, Derbyshire.

On certain species of Coleoptera new to Britain, or reinstated [*Bledius dissimilis* Er., Bridlington, 1878 and 1884, with details of its occurrence there; *B. arenarius* also abundant there; *Bythinus validus* Aubé, Bretby Wood, near Repton]. Ent. Mo. Mag., Aug. 1887, xxiv. 49-53.

J. GARDNER.

Durham.

Hydnobius Perrisii, &c., near Hartlepool [The &c. = *H. punctatissimus*, five species of *Anisotoma*, *Colon denticulatum*, and *Bryoporus hardyi*]. Ent. Mo. Mag., Jan. 1886, xxii. 185.

S. E. GILL.

Yorkshire.

N. H. Society, Ackworth [Notices of captures of beetles]. Nat. Hist. Journ., Oct. 15th, 1884, viii. 134.

R. W. GOULDING.

? Lincolnshire.

Beetles' [Geotrupes stercorarius] Burrows [presumably at or near Louth, though not stated]. Sci. Goss., March 1885, p. 70.

[R. W. GOULDING].

Lincolnshire.

Louth Naturalists' Society [*Barynotus marenz* noted for Haugham Pasture]. Nat. World, Aug. 1886, iii. 158.

July 1888.

JAMES HARDY.

Northumberland.

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885 [*Cionus scrophulariæ* (larvæ) and *Cicindela campestris* noted at Rothbury, 24th June; *Orchestes fagi* as very frequent on Tyneside; and *Batophila rubi* Fab., and *Agelastica halensis* noted at Dunston]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 38, 42, 59, and 63.

JOHN HILL.

Derbyshire.

Cryptorhynchus Lapathi [in Derbyshire; account of its infesting a sawfly tree]. Young Nat., Feb. 1887, viii. 39.

A. C. HORNER.

Nottinghamshire.

[Sherwood Forest Beetles: a *Rhizophagus*, probably new, and *Holopedina polypteri* Först., in company with, and probably parasitic on, *Cis vestitus*; all from Sherwood Forest; exhibited to Ent. Soc. Lond., July 6th, 1887]. Ent. Mo. Mag., Aug. 1887, xxiv. 72; Ent., Aug. 1887, xx. 215; Young Nat., Aug. 1887, viii. 160; and Zool., Aug. 1887, xi. 313.

H. WALLIS KEW.

Lincolnshire.

Food of the Whirlwig Beetle (*Gyrinus natator*) [at Louth]. Nat. World, April 1885, ii. 80.

H. WALLIS KEW.

Lincolnshire.

Louth Naturalists' Society [capture of *Cercus bipustulatus* at Burwell]. Nat. World, Aug. 1885, ii. 155.

H. WALLIS KEW.

Lincolnshire.

Rambles near the Coast [of Lincolnshire; notices of *Xantholinus glabratus*, *Phyllopertha horticola*, *Lagria hirta*, and *Agelastica halensis*]. Nat. World, Oct. 1885, ii. 190.

H. WALLIS KEW.

Lincolnshire.

Some Coleopterous Larvæ [*Chilocorus renipustulatus*, *Cassida viridis*, *Coccinella 7-punctata*, and *Adimonia tanaceti*, found near Louth; all described]. Young Nat., Oct. 1885, pp. 232-234.

H. WALLIS KEW.

Lincolnshire.

Aphis-eating Insects [*Coccinella 7-punctata* and *Chrysopa*, near Louth]. Nat. World, Dec. 1885, ii. 232.

H. WALLIS KEW.

Lincolnshire.

Another Postglacial Ravine [Hubbard's Valley, near Louth] and its inhabitants [including mention of *Melolontha vulgaris*, *Meloe violaceus*, and *Staphylinus cæcarius*]. Nat. World, March 1886, iii. 42.

H. WALLIS KEW.

Lincolnshire.

The Greasy-field and Grisel-bottom [near Louth; *Adimonia tanaceti*, *Meligethes rufipes*, *Badister bipustulatus*, *Dromius quadrimaculatus*, *Lema cyanella*, *Philonthus æneus*, *Helophorus aquaticus*, *Hydroporus palustris*, *Hydrobius fuscipes*, and *Gyrinus natator* mentioned]. Nat. World, June 1886, iii. 101-103.

H. WALLIS KEW.

Lincolnshire.

Woodland Rambles in Lincolnshire [in Maltby and Haugham Woods near Louth, 23rd April, 1886; numerous species of beetles are mentioned]. Young Nat., July 1886, vii. 129-131.

H. WALLIS KEW.

Lincolnshire.

In the Woods [near Louth] in Summer [*Necrophorus humator*, *N. ruspator*, *N. mortuorum*, *Silpha rugosa*, *Nitidula bipunctata*, *Hister cadaverinus*, *Dermestes lardarius*, *D. murinus*, *Silpha thoracica*, *Chilocorus renipustulatus*, *Phyllopertha horticola*, *Strangalia armata*, and *Coccinella 7-punctata* referred to]. Nat. World, July 1886, iii. 121-124.

H. WALLIS KEW.

Lincolnshire.

On the Lincolnshire Wolds [at Donington-on-Bain; *Acilius sulcatus*, *Calathus melanocephalus* L., *Anchomenus prasinus* Fab., *Amara plebeia* Gyll., *Pterostichus madidus* Fab., *Ocytus olens* Müll., *Philonthus aeneus* Rossi, *Agriotes lineatus* L., and *Aphodius fimetarius* L., noted]. Nat. World, Aug. 1886, iii. 141-143.

H. WALLIS KEW.

Lincolnshire.

[Beetles on the Coast of Lincolnshire: *Lagria hirta*, *Agelastica halensis*, *Cryptorhynchus lapathi*, *Cnecorhinus geminatus*, and *Otiorhynchus ovatus*, all mentioned as common, and their food-plants specified]. Sci. Goss., Sep. 1886, p. 208.

H. WALLIS KEW.

Lincolnshire.

Evenings in Spring [near Louth; *Dromius quadrimaculatus*, *Chrysomela polita*, *Otiorhynchus sulcatus*, *Ocytus olens*, *Nebria brevicollis*, *Leistus fulvibarbis*, *Phyllobius uniformis*, *P. argentatus*, *P. alneti*, *Necrophorus humator*, *Silpha rugosa*, *Creophilus maxillosus*, and *Bembidium rufescens* noted]. Nat. World, Sep. 1886, iii. 161-162.

H. WALLIS KEW.

Lincolnshire.

Note on *Adimonia tanaceti* L. [and its occurrence near Louth]. Ent. Mo. Mag., Oct. 1886, xxiii. 107.

H. WALLIS KEW.

Lincolnshire.

Natural History Rambles. No. 1. In the Woods [near Louth; *Cassida viridis* ('I believe') noted in Grisel Bottom]. Sci. Goss., Feb. 1887, p. 31.

E. LAMPLOUGH.

Yorkshire.

***Dytiscus marginalis* in a Draper's Shop [at Hull, where the species is stated to be very scarce].** Sci. Goss., Jan. 1887, p. 19.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

Yorkshire.

[Reports of Meetings; *Cetonia aurata* from Leeds.] Nat., June 1884, ix. 197.

THOMAS LUDGROVE.

Nottinghamshire.

***Choleva spadicea* near Nottingham [at the root of a tree, Jan. 1885; named by Rev. W. W. Fowler].** Ent., April 1885, xviii. 124.

J. E. MASON.

? Lincolnshire.

***Rhipiphorus paradoxus* [presumably near Alford].** Nat. World, Dec. 1885, ii. 236.

A. MATTHEWS.

? Yorkshire, Nottinghamshire.

Synopsis of the British Species of Orthoperus [*O. brunniipes* Gyll., the only British example is in P. B. Mason's collection, and appears to have been taken by the late Mr. Wilkinson, of Scarborough, presumably at that place; and *O. corticalis* Redt., two found by author some years ago in Sherwood Forest]. Ent. Mo. Mag., Oct. 1885, xxii. 107-110.

J. J. NIXON.

Derbyshire.

Great Capture of Water Beetles [in a dyke near Little Eaton, quite dry, hundreds of *Dytiscus marginalis*, with *Nepa*, *Notonecta*, and *Hydrous caraboides*: anecdote of capture of *D. marginalis*]. Young Nat., Feb. 1885, vi. 36-38.

A. RESTON.

? Lancashire.

Notes upon the capture of Coleoptera during flight [numerous species referred to]. Ent. Mo. Mag., July 1886, xxiii. 39-40.

GEORGE ROBERTS.

Yorkshire.

Topography and Natural History of Lofthouse and its neighbourhood [etc.]. Vol. ii. [*Lampyris noctiluca* (pp. 27, 246); *Phaedon tumidulum* (p. 134); *Timarcha* (p. 183)]. Leeds: printed for the Author. 1885. [pp. viii + 258].

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- W. A. ROBINSON. Yorkshire.
[Blaps mortisaga taken at 20, Bootham, York]. Nat. Hist. Journ., March 15th, 1886, x. 41.
- J. T. RODGERS. Lancashire.
Lepidoptera [and two Coleoptera—*Carabus nemoralis* **and** *Nebria gyllenhalii***] observed in the neighbourhood of Oldham, in 1884.** Young Nat., March 1885, p. 69.
- J. H. SALTER. Yorkshire.
Scarbro' [*Cicindela campestris* **swarming on the moors].** Nat. Hist. Journ., May 15th, 1885, p. 79.
- J. SANG. Durham.
Luciola italica at Darlington [in one of the streets, June, two seen, one captured, and determined by C. O. Waterhouse as a South European species whose occurrence so far north is rather remarkable]. Ent. Mo. Mag., Nov. 1885, xxii. 138.
- JOSEPH SIDEBOTHAM. Cheshire.
The Story of *Æcophora Woodiella* [with incidental mention of the occurrence of *Lymexylon navale* in Dunham Park, Cheshire, where it is found in scores and seen in hundreds]. Ent., March 1884, xvii. 54.
- J. W. SLATER. Yorkshire.
A Swarm of Aphodii [on Skircoat Moor near Halifax, some years ago; the species named as *A. sphacelatus***].** Sci. Goss., Jan. 1887, p. 21.
- E. STOTT. Lancashire.
Acanthocinus œdilis [a fine male taken in a Bolton cotton-mill in Oct. 1887; and one down a coal-pit about three years before]. Ent., Dec. 1887, xx. 327.
- HUBERT L. TERRY. Nottinghamshire, Lancashire.
Coleoptera [*Astinomus œdilis* **in a coal-mine at Cossall, Notts., August;** *Cychrus rostratus* **near Manchester, September].** Nat. World, Nov. 1885, p. 220.
- R. WILDING. Cheshire.
Ægialia rufa, F., at Wallasey [single specimens in May and in June 1883, found crawling on the bare sand of the Wallasey sand-hills, Cheshire, in company with *Æ. arenaria*]. Ent. Mo. Mag., Jan. 1884, xx. 191.
- R. WILDING. Lancashire, Cheshire.
Ocypus fuscatus at West Derby [near Liverpool; the species seems to occur in various places round Liverpool; *Philonthus fumigatus* **and abundance of** *Bembidium 5-striatum* **at West Derby, also noted].** Ent. Mo. Mag., Jan. 1885, xxi. 192.
- R. WILDING. Cheshire.
Cymindis vaporariorum at Heswell, Cheshire [several found under heath in Sep. 1883 and Oct. 1884]. Ent. Mo. Mag., Jan. 1885, xxi. 192.
- R. WILDING. Lancashire.
Amara fusca at Preston [a male taken, together with three *A. rufocincta*, under rejectamenta of the Ribble]. Ent. Mo. Mag., Jan. 1885, xxi. 192.
- R. WILDING. Cheshire.
Ægialia rufa Fab. [and its occurrence at Wallasey Sand-hills]. Ent. Mo. Mag., July 1886, xxiii. 40.

YORKSHIRE AND LANCASHIRE NATURALISTS AT SADDLEWORTH.

THE June Meeting of the Yorkshire Naturalists' Union was held close to the Lancashire and Cheshire border of the county on the 16th of the month, for the purpose of exploring a district which, although politically in Yorkshire, is drained by a Lancashire river. On this occasion the excursion was joined in by a number of Lancashire naturalists, including Messrs. W. H. Pearson, of Eccles, and F. Bower, of Manchester, E. Collier, of Manchester, John R. Byrom, of Fairfield, Councillor James Nield, of Oldham, J. B. Robinson, F.R.M.S., of Mossley, and Thomas Hick, B.A., B.Sc., of the Owens College, the latter an old and valued member and former vice-president of the Union. The morning opened in an inauspicious manner, the black clouds appearing to threaten a downfall, but as the day wore on matters improved meteorologically, and the day's explorations were carried out with comfort. Two parties were arranged. One, a geological one, was the most numerous, and under the able charge of Mr. W. Watts, F.G.S., the engineer to the Oldham Waterworks, worked round by Castleshaw and Denshaw from Diggle to Uppermill. The narrative of this route is given further on in the report of the Geological Section. The other party started from Greenfield Station, and had for its object the investigation of the Greenfield Valley. The ground over which this party was to work is grouse moor, and Mr. Lees, of Oldham, to whom the shooting rights appertain, gave permission to the Union to investigate it. He also instructed one of his keepers to accompany the party, and this added much to the enjoyment of the members and the success of their investigations. The keeper was an intelligent companion and an efficient guide, and not only did he protect his master's game, but did so without hindering in the least the careful search for plants and insects which was kept up throughout the day. The line of route, after a brief halt at Bill's-o'-Jack's, was along the bottom of the valley up to the Seal Bark Rocks and over the moor to Bill's-o'-Jack's again, and thence over the Church Moors to Uppermill. On the way was passed the curious pile of stones called 'Pots and Pans,' where the keeper informed the members, to the undisguised interest of one at least, that at the time of the repeal of the Corn Laws, the largest hollow, a capacious one withal, was filled with brandy-punch. Further on were the Fairy Holes, a narrow cleft in the rocks which runs underground for about forty yards. At this point the investigation ceased, for there was now but time to reach Uppermill.

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Here, at the Hare and Hounds, both parties met, and all the straggling groups of independent investigators joined them. Tea—a truly welcome and substantial Yorkshire tea—awaited the hungry scientists, and over constantly-replenished plates of beef, ham and tongue, and steaming cups of tea, notes were compared and captures discussed. The room was a large upper chamber in which were several quaint canopies of wood with various mottoes emblazoned thereon. Under one of these sat a burly geologist with the solemn injunction over his head ‘DO JUSTICE,’ a precept which he and his hungry comrades, with mutual exhortation, faithfully carried out. Near them were the botanists, who had to stoutly deny an assertion by the hammer-men that they had got *Malaxis paludosa*, a plant which, with all their labour, the plant-men had been unable to find in its recorded station. On this point appeal was made from the tea-table to the sectional meetings, with the result that the mountain in labour brought forth *Orchis maculata* for *Malaxis*.

The Sectional and General Meetings were held in the Lee Street Schoolroom, which had been kindly lent by the Rev. Mr. Doig, vicar of Uppermill. The chair at the general meeting was taken by an old friend and ex-president of the Union, Prof. W. C. Williamson, LL.D., F.R.S., of the Owens College, Manchester. The minutes of the Leyburn meeting having been confirmed, the Hull Geological Society was admitted into the Union by a unanimous vote, and Mr. and Mrs. J. W. Bilbrough of Ben Rhydding were elected Members. The roll-call showed that the forty or fifty members present represented ten societies. Mr. Thomas Hick, B.A., B.Sc., of the Owens College, proposed a vote of thanks to Messrs. Lees and Abel Buckley for granting permission to visit their estates, and to the Vicar for the use of the schoolroom, to the leaders of the parties, and to all who had co-operated with the secretaries in arranging the meeting. The sectional reports were then taken.

For the Vertebrate Section, Mr. Thomas Bunker, of Goole, secretary of the section, reported that very few vertebrates were noticed, and those in the Greenfield Valley only. These were the Song Thrush, Blackbird, Ring Ouzel, Water Ouzel, Robin, Hedge Accentor, Skylark, Yellow Bunting, Common Bunting, Starling, Grouse, Magpie, Wheatear, Tree Pipit, and Cuckoo—fifteen in all.

For the Conchological Section, in the absence of all its officers, Mr. W. Denison Roebuck, F.L.S., reported that conchologically the day was a blank, only two species having been seen by himself and Messrs. E. Collier and J. Conacher, the highly unfavourable geological character of the district being against molluscan life. The two species were *Arion bourguignati*, found on the canal-side at Green-

field, and *Limnæa peregra*, which was abundant at Saddleworth, both in the canal and in the river Tame. After the meeting was over, and the Yorkshire members had left, Mr. Collier worked the canal from Uppermill down to Greenfield, and added a third species, *L. auricularia*, of which he found several specimens, in addition to a very peculiar inflated variety of *L. peregra* with the lip turned back.

For the Entomological Section, in the absence of all its officers, Mr. G. T. Porritt, F.L.S., F.E.S., of Huddersfield, reported that *Hadena glauca* had been found commonly around Bill's-o'-Jack's, also *Phoxopteryx myrtillana*, *Clepsis rusticana*, and various other lepidoptera. He had taken a good many Neuroptera, including Perlidæ, Hemerobidæ, and Trichoptera, but several of the species would require future examination for determination.

The report for the Botanical Section was given by Mr. P. F. Lee, of Dewsbury, Phanerogamic Secretary, who enumerated and exhibited some of the best flowering plants and ferns gathered during the day. In several places on the higher flanks of the moors, *Rubus chamaemorus*, the Cloudberry, presented a sight to be remembered, as it was in full bloom; but it was stated that the greatest number of observations had been made near water-courses and in the grand ravine leading to Seal Bark from Bill's-o'-Jack's. The plants thought worthy of special mention were:—*Cardamine amara*, *Viola palustris*, *Epilobium angustifolium* (several plants on the rocky stream-bank under Seal Bark), *Vaccinium vitis-idaea* (with leaves like box and beautiful waxy racemes of flowers), *Empetrum nigrum*, *Scirpus cæspitosus*, *Narthecium ossifragum*, *Eriophorum angustifolium* var. *elatius* Koch (the broad-leaved uncommon form of the Cotton-grass), *Drosera rotundifolia*, *Luzula campestris* var. *erecta* Desv. (the moorland form of the Field Wood-rush), *Carex pilulifera*, and *C. flava* var. *minor* Towns. Eight species of Ferns were noted, amongst them being *Polypodium dryopteris* and *Cystopteris fragilis* at Seal Bark only, *Nephrodium oreopteris* on the wooded bank below Bill's-o'-Jack's, and *N. filix-mas* var. *borreri* Newm. in fair abundance near the stream at Seal Bark. *Hymenophyllum unilaterale* occurs at Seal Bark Rocks, and had been gathered there a day or two before the Union's visit. The plant upon which the botanologists were most intent was the rare bog orchis, *Malaxis paludosa*, long known at Gulliver's swamp in the neighbourhood of Bill's-o'-Jacks, its only West Yorkshire habitat. A worthy vice-president of the Y.N.U. almost crept over every inch of the swamp, but even his lynx eye failed to detect the slightest trace of the rarity. Had it been August instead of (this year) cold, dull June, the ardent representatives of this section might have been better rewarded.

Mr. W. H. Pearson and Mr. F. Bower had collected the following Hepatics, most of which are common: *Diplophyllum albicans*, *Scapania undulata*, *Cephalozia bicuspidata*, *C. divaricata*, *Chiloscyphus polyanthus*, *Kantia arguta*, and *Pellia epiphylla*, all at Uppermill, and *Jungermania riparia* at Saddleworth.

For the Geological Section, Mr. Councillor Nield, of Oldham, gave an address on the geological features of the district, after which Mr. S. A. Adamson, F.G.S., secretary, the only officer of the Section present, said that the objects of the excursion may be briefly stated to have comprised chiefly, a personal observation of the continuation of the great Pennine anticlinal which runs directly down the Saddleworth Valley; a more extended idea of the powers of denudation in carving out the deep valleys and creating the rugged escarpments on every hand; and a practical acquaintance with the Lower Millstone Grits and Upper Yoredales. These, happily, were all obtained, constituting the day one of the highest value in field work. The section had also the inestimable privilege of being conducted by thoroughly practical and experienced leaders in the persons of Mr. Watts, F.G.S., manager to the Oldham Corporation Water Works, who had prepared horizontal and vertical sections of the rocks met with, and Mr. Councillor Neild, of Oldham, one of the ablest lieutenants of Prof. Williamson, F.R.S., in his discoveries of fossil plants.

The geologists alighted at Diggle Station, were there received by Mr. Nield, and lost no time in making the ascent of the dark and lofty hill, right before them, known as Harrop Edge. This is capped like Diggle Edge, Millstone Edge, the Noddle, and other adjacent hills, with the Kinderscout Grit. On the road, a little above the Preston's Arms, a halt was made, when a comprehensive view of the beautiful scenery of the Saddleworth Valley was obtained. The fine escarpments of Diggle and Millstone Edges bounded the view on the north east, whilst directly in front, on the other side of the valley, stretched the lofty plateaux of the grit moorlands, in places 1,800 to 1,900 ft. in height, extending southwards into Cheshire, and broken only by the picturesque valley of Greenfield.

Mr. Watts here met the party, and with the aid of his carefully prepared contour map, gave very practical instruction in the physical geography of the district. On Harrop Edge being crossed, a descent was made in the direction of the ancient village of Castleshaw, where Mr. Watts showed the party the site of an old Roman camp, and also the direction of the Roman road which crossed the hills of Standedge from Slack to it. The party had been passing over the Upper Yoredale Shales on the slopes of the descent, thence arriving

at the Yoredale Grits in the lower reaches of the valley. The upheaval of the beds which caused the great anticlinal referred to, threw off the overlying Yoredale shales and Grits which were formerly capped by the Kinderscout Grits, and created dips east and west, known more expressively as the Yorkshire and Lancashire dips. Then denudation came in attacking and conquering easily the openings made by this dislocation, thus forming a wide and ever-increasing valley. The shales are easily carried away, thus undermining the grits, which fall off at the jointing of the rocks. All the way up the ascent were noted huge masses of grit, which certainly are the relics of ancient escarpments. Some of these blocks, from long weathering, showed admirably current-bedding on their sides.

The party now ascended Millstone Edge to view the Cudworth Quarry, where the Kinderscout Grit is being extensively quarried for the use of the new waterworks. The stone is much intersected by joints, but is well adapted for rough work. In many places it is quite of a conglomeritic character, having large pebbles enclosed of white quartz. They then entered the navvies' cabin (the tropical heat of the interior being a painful contrast to the fresh breeze outside), where Mr. Watts unfolded a large diagram showing the succession of beds from the summit of Pule Hill (a lofty elevation to the north east), to their present position.

As this is such a valuable and important section, the description given by the Geological Survey may be profitable if quoted for reference: 'The Kinderscout Grit is very well shown along the road to Huddersfield, where it crosses Millstone Edge. There are here three principal beds of grit, separated by two beds of shale. Further on we reach a series of dark shales interposed between the Kinder-scout Grit and the Third Grit. Then the second shale with coal, forming the flat partially occupied by Redbrook Reservoir. Then a bed of sandstone, quarried for road material at Great Nab End, encircling the lower flank of Pule Hill. The steep slopes of the hill are formed of the first shale series, containing a coal seam half a foot thick, formerly worked by tunnelling. At the top of the hill we reach what we suppose to be the Flagstone, and finally the Rough Rock.' This gives, therefore, a general view of the succession in this part of Yorkshire.

The party then crossed a tract of boggy ground, and ascended another grit-capped eminence named the Noddle. Ever since they had crossed Harrop Edge, nearly three hours before, they had observed on the very top of this lofty and breezy hill a solitary figure, perched like a monument; when they arrived at the summit they found this to be Mr. Brierley, the historian of Saddleworth. A pleasant conversation was then held with that gentleman, during which he described the

salient points of the scenery around them. The view was most expansive and magnificent, and ever and anon bright flashes of sunlight would illumine the dark summits and escarpments encircling them. The head of the valley from this point appeared like a gigantic amphitheatre, or as may be said, the half of a circular basin with gradually sloping sides scooped out by denudation. A few miles away on the east, was a long escarpment stretching across, known as 'Helpet Edge,' in which Mr. Neild said the outcrops of several coal-seams of the Gannister series occurred, and where some notable discoveries of fossil plants had been made by him. The party now descended the steep side of Noddle to Mr. Watts' residence in the valley, where he displayed to them a splendid set of specimens of erratic blocks he had obtained on the drainage areas of the Oldham Waterworks. They were certainly varied in their character, and must, when completed, throw much light upon the glaciation of the district. To name a very few, they comprised Criffel and Eskdale granites, Lake district felsites, syenites, etc.; Permian nodule containing *Schizodus*, Silurian grits and schists, etc. The specimen which occasioned most controversy and speculation was an almost perfect example of a familiar Liassic fossil (*Gryphaea incurva*) he had obtained from the drift. Could this be a relic of an ancient Liassic area, now altogether removed by denudation, as many other deposits have undoubtedly been? Mr. Watts most kindly presented each member with a list of the specimens exhibited. He also showed a fine example of a neolithic axe, found in a cleft of the grit at Cudworth Quarry.

Mr. Watts now conducted the party to inspect the gigantic puddle trench now being constructed for the new reservoir at Lower Castleshaw. He described the character of the strata met with in excavating to the depth of 90 ft., viz., surface soil, 1 ft.; gravel, 13 ft.; sandy loam, 12 ft.; laminated marl, 3 ft.; yellow loam, 1 ft.; followed by blue shale. Some of the party now made a short detour to inspect an erratic block in the centre of a field. It was examined and measured, but beyond saying that it was a trap-rock, its exact determination must be deferred for a more minute consideration. It was 5 ft. by 8 ft. 6 in., and its longest axis north and south. And now Mr. Watts was obliged to leave the party, but before doing so, Messrs. Adamson, F.G.S., and Hemingway expressed on their behalf the great obligations all were under for the care and ability with which he had acted as conductor.

The Section for Micro-Zoology and Micro-Botany was not represented, and the proceedings were concluded by a vote of thanks to the Professor for presiding, moved by Mr. W. H. Pearson, and seconded by Mr. J. B. Robinson, F.R.M.S.

DIPTERA FROM THE ALFORD AND LOUTH DISTRICTS OF LINCOLNSHIRE.

H. WALLIS KEW, F.E.S.,

London; late Hon. Sec. to Louth Naturalists' Society, Louth.

IN February last, Mr. Jas. Eardley Mason sent to me a box of flies casually collected by him when in search of insects of another Order in the Alford district, and they have now been examined by Mr. E. Brunetti. Previously, Mr. Verrall had kindly identified others, which I had collected in the neighbourhood of Louth. They are as follows:—

ALFORD DISTRICT.

- Chloromyia formosa**, Chapel, 26th July, 1885; Sandhills, Chapel, 5th July, 1886.
Microchrysa polita, Alford, two; Well, one, June 1887.
Sargus cuprarius, Claythorpe, 6th July, 1887; Chapel, two, July 1887.
Hæmatopota pluvialis, Alford, one; Well, one, 3rd July, 1887.
Chrysops cæcutiens, Alford.
Thereva annulata, Chapel, 19th July, 1886.
Eutolmus rufibarbis, Chapel, 12th July, 1886.
Empis borealis, Well, 6th June, 1885.
Eristalis tenax, Greenfield, 8th June, 1887; Alford, three, September and December, 1886.
Eristalis arbustorum, Rigsby, 13th September, 1886; Chapel, August 1887.
Volucella pellucens, Claythorpe, 6th July, 1887.
Helophilus pendulus, Chapel, August 1887.
Syritta pipiens, Alford, 1st September, 1887.
Xylota segnis, Greenfield, 8th June, 1887.
Rhingia campestris, Well, 5th June, 1887.
Chilosia œstracea, Chapel, 26th July, 1885.
Syrphus ribesii, Chapel, 25th July, 1887; Alford, 27th June, 1887; Well, 5th June, 1887.
Platychirus clypeatus, Chapel, August, 1887.
Baccha obscuripennis, Rigsby, 13th September, 1886.
Musca corvina, Chapel, August 1887.
Pollenia rudis, Rigsby, two, 3rd April, 1887; Alford, 29th December 1886; Claythorpe, 6th July, 1887.
Morellia hortorum, Chapel, 26th May, 1885.
 July 1888.

Cyrtoneura stabulans, Alford, 28th February, 1887.

Spilogaster communis, Well, June 1887.

Limnia marginata, Sutton-le-Marsh, three, 5th August, 1885;
Chapel, one, August 1887.

Scatophaga stercoraria, Chapel, 26th July, 1885; Chapel, 9th
August, 1886; Well, June 1887.

Palloptera arcuata, Well, June 1887.

Platystoma seminationis, Well, 27th June, 1886.

Sepsis cynipsea, Well, 22nd September, 1886; Claythorpe, 6th
July, 1887.

Themira putris, Well, June 1887.

Micropeza corrigiolata, Well, 6th June, 1885.

Opomyza germinationis, Claythorpe, 6th July, 1887.

Phora rufipes, Alford, January 1887.

Ptychoptera contaminata, Rigsby, 3rd August, 1885.

Limnobia flavipes, Greenfield, two, 8th June, 1887.

Trichocera regelationis, The Sycamores, Alford, 2nd December,
1887.

Tipula gigantea, Well, June 1887.

Hippobosca equina, Well, 8th September, 1886.

LOUTH DISTRICT.

Chloromyia formosa Scop., Horncastle Road, 24th July, 1886.

Dysmachus trigonus Mg., Mablethorpe, June 1887.

Empis livida L., near Louth, 1887.

Empis tessellata F., Burwell Wood, 1887.

Dolichopus æneus Dg., near Louth.

Eristalis tenax L., Louth, 27th March, 1887.

Eristalis pertinax Scop., Kenwich Lane, 1887.

Eristalis arbustorum L., Kenwich, 12th August, 1886.

Volucella bombylans L., near Louth.

Chrysophilus auratus F., three, near Louth.

Borborus equinus Fen., near Louth.

Scatophaga stercoraria L., two, near Louth.

Chilosia pubera Ztt., Haugham Wood, 1887.

Cyrtoneura stabulans Fen. and *Blepharoptera serrata* L.,
7, Lee Street, Louth, February 1887.

Bibio johannis L., Hallington.

Bibio marci L., two, near Louth, 1887.

Mr. Verrall pointed out that *Chilosia pubera* Ztt. is not a common insect, but is probably widely distributed. I took my specimen on a flower of *Caltha palustris*.

INSECT MIGRATION AT HELIGOLAND.

CONTRIBUTED BY JOHN CORDEAUX, M.B.O.U.

In the notice of Heligoland as given in the January number of *The Naturalist* I have very briefly alluded to the insect migration as observed on that island. I am not aware that any list, partial or complete, of the diurnal and nocturnal lepidoptera in Mr. Gätke's collection has been published, excepting a short notice by M. Edm. de Selys-Longchamps in a paper which originally appeared in the 'Bulletin de la Société Zoologique de France,' t. vii. 1882, under the title of 'Excursion a l'île d'Helgoland en Septembre 1878.' This paper, of which, through the kindness of the author, I possess a separate copy, has reference almost exclusively to the migratory avi-fauna of Heligoland; in the concluding paragraph, a translation of which is here given, there is a short notice and list of butterflies and moths which have from time to time occurred.

M. de Selys-Longchamps says 'Mr. Gätke is not an entomologist, but he has collected all the insects that he has been able to meet with in Heligoland. Subjoined is a list of the Diurnal Lepidoptera and the Sphingidæ that I saw in his cases. I took the names very hurriedly; however, I do not think there is any serious error. The species of Diurni which are preceded by an asterisk are those found as a rule nearly every year. The others have been collected only very accidentally.

DIURNI (RHOPALOCERA).

*Papilio machaon.	Vanessa antiopa.
Papilio podalirius.	*Vanessa C-album.
Aporia cratægi.	*Vanessa atalanta.
*Pieris rapæ.	*Vanessa cardui.
*Pieris napi.	Argynnis dia.
*Pieris brassicæ.	Argynnis lathonia.
*Leucophasia sinapis.	Argynnis aglaja.
Colias palæno.	Argynnis paphia.
Colias hyale.	Melitæa didyma.
Colias edusa.	*Satyrus semele.
*Rhodocera rhamni.	Melanargia galatea.
Polyommatus phlæas.	Pararge mæra.
Polyommatus hippothoë.	Pararge megæra.
Lycæna acis.	Pararge ægeria.
Lycæna arion.	Cænonympha pamphilus.
Lycæna icarus.	Cænonympha tiphon.
Apatura iris.	Cænonympha iphis?
Limenitis sibylla.	Epinephele janira.
Vanessa polychloros.	Epinephele tithonus.
*Vanessa urticæ.	Epinephele hyperanthus.
*Vanessa io.	Hesperia comma.

CREPUSCULARIA (SPHINGIDÆ).

Sphinx ligustri.	Deilephila celerio.
Sphinx convolvuli.	Smerinthus ocellatus.
Sphinx pinastri.	Smerinthus populi.
Deilephila galii.	Smerinthus tilia.
Deilephila euphorbiae.	Acherontia atropos.
Deilephila elpenor.	Macroglossa stellatarum.
Deilephila porcellus.	Zygæna minos.

Among the Bombycidae we must notice the singular melanism of *Spilosoma lubricipeda* named *zatima* Cramer (*radiata* Steph.), almost exclusively peculiar to Heligoland. Mr. Gätke has raised a point which proves, by the variation of examples, that it is a variety and not a distinct species. It is met with, but very rarely, in Holland and on the east coast of England.

The list of butterflies is composed chiefly of species which exist in Southern Norway, to which may be added some others which are found in Germany.

In reply to some questions I asked Mr. Gätke in reference to migratory Lepidoptera, he writes me:—‘I can assure you that my cases only contain those that I have obtained here, the greatest part taken by my own hands. The specimens were often very faded and ragged, and in those instances I procured good specimens from the Continent, which I have placed side by side with those caught here.

‘Those I was not able to identify I sent to friends good enough to determine them for me. Such was the case with *Melitæa didyma* (whose appearance so much surprised you, also its freshness), and which has been determined on good authority.

‘Of *Deilephila celerio* I took one very fresh example. I took twice in my own garden the pretty little nacreous white Pyralid, which I was told is the *Margarodes unionalis* Hübn., and the habitat of which is the South of France.’

The information given by Mr. Gätke, sincere and frank as is everything he writes, shows that if there is any error in this list, it must not be attributed to him.’ This concludes the remarks. I am aware that anything connected with the migration of insects at Heligoland must be of considerable interest to English entomologists, and, as there are doubtless many who have not seen, or who would not be able to obtain a copy of M. de Selys-Longchamps’ paper, I have ventured to give an English translation of it.

NOTE—COLEOPTERA.

Carabus nitens in Swaledale.—On the 20th of May, a bright and sunny day, while Mr. Roebuck and I were investigating the plateau on which, at an altitude of 1,620 ft., Birkdale Tarn is situate, I found a couple of examples of this handsome beetle. On the previous evening we noticed *C. violaceus* on a mountain path near Keld.—W. EAGLE CLARKE, Leeds, May 22nd, 1888.

5 JUL 1888

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LEEDS: BASINGHALL STREET.

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The Editors of 'The Naturalist,'

Sunny Bank, Leeds.

PRICE SIXPENCE (by Post, Sevenpence).

ANNUAL SUBSCRIPTION (from the OFFICE only), 5s., post free.

CHANGE OF ADDRESS.—Mr. Clarke having now taken up his duties at the Museum of Science and Art, Edinburgh, the Editors of 'The Naturalist' have no further connection with 'Park Row, Leeds,' and should in future be addressed at SUNNY BANK, LEEDS.

The NATURALIST.

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EXCHANGE.

Notices of Exchange inserted free of charge to Subscribers.

WANTED.—Living examples of *Limax arborum*, *L. levis*, and *L. tenellus*.
 British Land and Freshwater Shells in exchange.—W. A. GAIN, Tuxford, Newark.

Yorkshire Neuroptera and Orthoptera.—I am anxious during the present and several future seasons to work up the Neuroptera and Orthoptera of our county as much as possible, with a view to publishing a list of species, with their localities, etc., and shall be very grateful to all entomologists (or other naturalists) who, when out collecting their own particular groups of objects, will kindly kill and pin (of course they need not trouble to set them) one or two or three specimens of any species they may come across, and send them to me at the end of the season—or oftener if it be not too much trouble. The families in the Neuroptera wanted are the *Libellulidæ* (Dragon-flies), *Perlidæ* (Stone-flies), *Sialidæ*, *Raphidiidæ* (Snake-flies), *Osmyridæ*, *Hemerobiidæ*, *Chrysopidæ* (Lacewing-flies), *Coniopterygidæ*, *Panorpidæ* (Scorpion-flies), and the *Trichopteræ* (Caddis-flies). The two other British groups, *Psocidæ* and *Ephemeridæ* (May-flies), I do not propose to touch at present. The Orthoptera include the *Forficulidæ* (Earwigs), *Blattidæ* (Cockroaches), *Acrididæ* (Grasshopper and Locusts), and the *Achelidæ* (Crickets), all of which, with the exception of the several universally abundant and distributed species, are wanted.—GEO. T. PORRITT, Greenfield House, Huddersfield, May 18th, 1888.

Conchology.—I have several specimens of *Venus exoleta* which I should like to exchange for other Marine specimens.—ARTHUR SMITH, 103, Freeman Street, Grimsby, July 11th, 1888.

Improved Egg Drills (2 sizes) and Metal Blowpipe with instructions 1/3 free. 'Hints on Egg Collecting and Nesting,' illustrated, 3½d. free. Birds' Skins, Eggs (side-blown and in clutches with date), Lepidoptera, Ova, Larvæ, and Pupæ, Artificial Eyes, and all kinds of Naturalists' Requisites. Lists, one stamp. All specimens, &c., sent out 'on approval.'

J. & W. DAVIS (Naturalists), DARTFORD, Kent.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is John Eggleston, Park Place, Sunderland. Lists free.

THE IRRUPTION OF PALLAS' SAND-GROUSE.

Co. Durham.—Six were noticed in a field between Bishop Auckland and Byers Green, on June 3rd.—T. H. NELSON, Redcar, 13th July, 1888.

Derbyshire.—A specimen of this bird came to grief by striking the telegraph wires at Breaston, a village near the Derwent, and a second bird was reported at the same time; both occurrences were noted at the end of May.—F. B. WHITLOCK, Attenborough, 3rd July, 1888.

Isle of Man.—A correspondent residing in the Isle of Man informs me that a large flock of about fifty visited the Island early in July.—T. H. NELSON, Redcar, 13th July, 1888.

Nottinghamshire.—Mr. Whitaker, of Rainworth, writing to *The Field*, records the occurrence of a single specimen on June 14th. When first observed it was flying towards him. He describes it as looking like a gigantic Swift. He also states that it uttered a loud note, like 'teck, teck, teck.'—F. B. WHITLOCK, Attenborough, 3rd July, 1888.

Cleveland, Yorkshire.—According to the information I have been able to collect, it appears that Sand-Grouse (*Syrrhaptes paradoxus*) were seen here in the second week in May, the precise date I could not ascertain; a flock of six was first noticed at the Tees mouth, and frequently observed until June. Most probably all these birds perished, as several were found dead on the neighbouring salt-marshes; the tail and a foot of one were brought to me on the 12th of June. On May 22nd a female, in good condition, was picked up on the sands east of Redcar; the ovary contained eggs the size of No. 1 shot. About the same date another specimen was washed up by the tide; I saw the remains of this bird as late as the 28th of June. On the 7th June five were shot from a large flock near Marske. I had an opportunity of examining them shortly afterwards, and secured two; there were four females and one male; all the females had eggs in the ovaries, and one had evidently nested, as the ovary had only two eggs, one the size of a hazel-nut. On June the 10th a flock of twelve was seen on the Redcar sand-hills; on the 12th a flight passed one of the fishing-boats at sea, heading towards land. Other flocks have been reported at various times, but probably they formed part of those already mentioned, although, on the other

hand, it is not improbable that fresh arrivals may have come over June 25th, a pair were seen near the Tees mouth; 30th, wind N. strong, I found one on the sands near Redcar; it had been in the water for some considerable time, for the head was gone and the body sodden with water. Same date, a flock of thirteen was flushed near the Tees mouth. July 1st, a flock of about a dozen, and an odd bird, were on Coatham sands. 3rd, one on the sands near Redcar; it remained within a hundred yards of the town, picking amongst the gravel at high-water mark, until disturbed by a passing dog. 4th, eight at the Tees mouth, flying W. 9th, two flew past Redcar at 6.30 a.m., going N.W., and calling loudly.

Other instances in Cleveland:—

About the end of May one was picked up at Battersby, on the railway, killed by flying against the telegraph wires.

May 23rd, twelve near Whitby, and a male and female shot.

June 1st, a female found below the telegraph wires, between Hinderwell and Kettleness.

June 10th, a flock of twenty near Ormesby.—T. H. NELSON, Redcar, 13th July, 1888.

Boroughbridge.—Mr. Christopher Clarke, of Minskip, near Boroughbridge, informs me that on the 20th of June he flushed a covey of about twenty Sand-Grouse in a clover field between Minskip and Staveley. The birds alighted again in the same field, and so gave him a further opportunity of identifying them. On the 27th of the same month he saw a single bird near his farm buildings, within a few yards of a spot where some pigeons and poultry were feeding. When this bird rose he called it, whereupon it turned and flew over his head, within easy gunshot. The birds were not to be found yesterday, though a careful search of the field was made.—E. PONSONBY KNUBLEY, Staveley Rectory, July 6th, 1888.

NOTE—ORNITHOLOGY.

Cuckoo in Berwick Town.—It is seldom that dwellers in towns have the pleasure of hearing the unmistakable note of this summer visitor (*Cuculus canorus*). This morning about five o'clock I listened to it with pleasure for some time, the bird being in a tree behind my house. I had a similar experience three or four years ago at the same season: returning from one of those night expeditions to which country doctors are liable, I heard, on going to my bedroom about four a.m., the note of the Cuckoo from the same trees. Rather apprehensive that I might not be credited if I related this at the breakfast table, I awoke two or three members of my family in order to bear witness to the unusual phenomenon. I suspect that in both cases the birds had just arrived from their continental winter resorts, for my house is within half a mile of the sea, with nothing but green fields intervening, and the trees in the little garden must no doubt be a welcome resting-place after a flight across the North Sea.—P. MACLAGAN, Berwick, May 1st, 1888.

GYRFALCONS IN THE LAKE DISTRICT.

REV. H. A. MACPHERSON, M.A., M.B.O.U.,
Carlisle; Joint-Author of 'The Birds of Cumberland.'

I NOTICE that the July number of *The Naturalist* contains some remarks on the three Gyrfalcons well known to have been obtained in the Lake district. Particulars regarding such rare birds are so important that I may fairly claim to add a few words to what has been there said; especially as I have personally interviewed all the persons concerned, and carefully examined the specimens on many occasions. As regards the statement of Mr. John Watson, that Mr. Goodchild sent him 'privately printed notes,' I may point out that not only are two of the specimens already mentioned in 'The Birds of Cumberland,' but all three birds were recorded in detail in the 'Transactions of the Cumberland and Westmorland Association,' of which I have the honour to be the zoological recorder.

The Greenland Falcon is, as Mr. Watson states, preserved in the fine collection of the Musgrave family at Edenhall, Penrith, and a grand bird it is.

The skin of the Iceland Falcon, killed at Winton, was deposited some years ago in the Carlisle Museum by my friend Mr. J. G. Goodchild. There it remains, and only about six months ago I called Mr. Duckworth's attention to the fact that we had omitted this specimen from notice in the 'Birds of Cumberland.' I was myself responsible for draughting our little book, and how I forgot this specimen, which was in my charge, I cannot say, but I was working under high pressure.

The remains of the Iceland Falcon, killed on Cross Fell, have been in *my own* possession for the last four years. The late Mr. Greenwell, their original owner, had a long talk with me about the specimen, some two years previous to his lamented decease; he showed me all his notes, and handed over to me this bird's sternum and feathers.

To conclude, it is perfectly true that the three Gyrfalcons above mentioned are the only authentic ones that we know to have been obtained in the Lake counties. But both Mr. Hodgkinson of Preston, and the late James Fell of Carlisle (who only died about six weeks ago), described to me how they each met with a white Gyrfalcon in the north of Cumberland, though neither of the birds were shot. Mr. Harris of Cockermouth also favoured me with some information regarding an Iceland Falcon caught near Workington, but this is believed to have been an escaped bird. Various 'white hawks,' which have been reported to me from time to time by keepers, have proved to be light-coloured Buzzards and Rough-legged Buzzards.

CROSSBILLS IN HELIGOLAND.

CONTRIBUTED BY JOHN CORDEAUX, M.B.O.U.

IN a letter dated July 1st, Mr. Gätke sends the following interesting notes of the occurrence of the Crossbill on migration at Heligoland:—

‘Have you seen any Crossbills (*Loxia curvirostra*)? We are swarming here with them. Since the 16th of June there have been flights from 10, 20, 50—and sometimes all the hawthorns in my garden you know so well are crammed with them. There must during some days have been hundreds dispersed amongst the foliage. When they are feeding they remain quite dumb, and only when taking wing the whole chorus begins, calling “cüt, cüt, cüt.” I have just mounted an old male, almost as red all over as a male *Fringilla erythrurus*; a few with white bars have been reported, but I have not seen one. They are of all shades, from lemon rump to orange scarlet, and almost carmine, but the greater number, as you may fancy, are grey birds, but not a single striped young one amongst them. These birds are rather out of date; they are not *regular* visitors to this island, years intervene without any being seen, and when they do appear it has almost invariably been in August, with boisterous north-westerly winds and rain; this year flight has been two months too early, and came with fine sunny weather. All are in excellent plumage—wings, tail, and all.’

Mr. Thos. Winson writes from the Spurn under date of July 17th—‘Some Crossbills were shot here last week, and one caught alive and kept a week on board the Bull Lightship, when it escaped and flew away.’

NOTES—ORNITHOLOGY.

Arrival of Crossbills on the Yorkshire Coast.—Crossbills, I have just heard, have arrived on the Holderness Coast. This is a most interesting fact, and especially so when taken in conjunction with Mr. Gätke’s excellent note on this species at Heligoland on this page. I hope to have further information furnished, and invite others to send in any notes they may have on the appearance of this species in the North of England.—W. EAGLE CLARKE, Edinburgh, July 20th, 1888.

Siskins in North Derbyshire.—While on the moors of North Derbyshire on the 8th December, 1887, Mr. West (curator to the Rotherham Naturalists’ Society) and myself had the good fortune to come across a small flock of Siskins (*Chrysomitris spinus*), consisting of three males and two females, all of which we secured on account of their rarity, although it seemed a pity to take such harmless lives. There was a heavy fall of snow on the ground at the time, and the birds were feeding in a small clump of alders which we were beating through in search of Woodcock. I had never met the bird wild before, although I had seen it in a caged state. Mr. Cordeaux speaks of it as very rare, so I thought the occurrence worth recording.—F. W. DICKINSON, Rotherham.

Naturalist,

NOTES ON THE 'FLORA OF WEST YORKSHIRE.'

A. CRAIG CHRISTIE, F.L.S.,
Edinburgh; Hon. Sec. Scottish Natural History Club.

I HAVE only had time to glance over Mr. Lees' magnum opus, and now send a few notes which I have jotted down in the course of doing so.

Thalictrum alpinum L. (Page 111). This is certainly in the vicinity of Settle, but as the plant is very common with us in the North I do not recall the exact locality; 'hills at the back of Settle' is the most exact definition. I have no doubt it is on Ingleborough and your other big hills.

Sagina eu-apetala E.B. (Page 169). Settle.

Sagina ciliata Fries. (Page 169). Settle.

Sagina nodosa (The **S. glandulosa** Bess.). (Page 170). I have found this on the river side above Settle, on sand.

Melilotus alba Lam. (Page 192). In very large quantity in an old quarry near Skipton; was there for a number of years.

Prunus padus (Page 206) is called 'hagberry' in many parts of Scotland, where the rough furrows in a peat moss are called 'haggs'; as the species grows on that kind of ground I have no doubt the name originated in that way.

Alchemilla arvensis Scop. (Page 208). Is found on the hills above the Victoria Cave, and also at Malham Cove.

Linaria minor Desf. (Page 338). On dry ground at Settle, also on the railway-line.

Asplenium septentrionale Hull. (Page 502). This will probably be found on the south side of Ingleborough. In all the Scotch stations that I know this plant grows on trap rocks, and if there are any trap dykes on Ingleborough they should be carefully examined.

Asplenium adiantum-nigrum L. (Page 504). Malham, Settle, and Giggleswick, on Limestone.

Aspidium lonchitis Sw. (Page 507). I have seen nothing like the true plant near Settle, and forms of '*aculeatum*' are often confounded with it; it is more likely to be on Ingleborough, Penyghent, etc., than at a lower elevation. No record for this plant ought to pass unless the specimen is in good fructification.

Nephrodium æmulum Newm. (Page 511). With us in Scotland this plant occurs on sandstone; the Settle district is a very unlikely one for it, being *far too dry*.

Polypodium phegopteris (Page 513). I have seen this near Bradford, but do not know the name of the locality.

Ophioglossum vulgatum L. (Page 515). At Malham Cove in quantity.

Lycopodium inundatum L. (Page 517). Is I believe more common than is usually supposed, but is often hidden by surrounding vegetation. I know one locality which has been on record for over forty years.

NOTE.—To Mr. Christie's positive impression (which, however, cannot rank as accepted fact) as to the occurrence of *Thalictrum alpinum* 'on the hills behind Settle,' I might fairly reply in the very words used with regard to my record of *Nephrodium emulum* in Settle Woods, that the district is 'an unlikely one,' being 'far too dry,' but my record rests on the unimpeachable testimony of Edward Newman, an authority on Ferns; whilst as against Mr. Christie's—a comparative stranger's—opinion, there is the fact that the Alpine Rue is a plant of wet boggy mountain- and rill-sides; that bogs over the fissured limestone area of Settle are ill developed, and that not one of the many lynx-eyed botanists, from Ray, Lister, Blackstone, and Dickson downwards, to Tatham, Howson, and others of latter days, have ever observed the alpine *Thalictrum* thereabout. Mr. Christie's lack of doubt, and attempted justification for not having made a precise note of where he saw it, cannot, under the circumstances, be allowed to have any real weight. I am unwillingly constrained to add that the remarks upon the probability of *Asplenium septentrionale* being ultimately found 'on the south side of Ingleborough if there are any trap dykes' there, must come under the same imponderable category, Mr. Christie being clearly unaware that there is no trap or basaltic rock anywhere in West York.—F. A. LEES.

Duplicated Generic Names.—As a supplement to the list given on pp. 157-8, the following instances of generic names duplicated either in the Animal or Vegetable kingdoms may be given, and doubtless research would add many others:—*Gadus*, in Pisces and Mollusca (Dentaliidae); *Argiope*, in Brachiopoda and Araneida; *Trogodytes*, in Primates and Aves; *Diploaxis*, in Phænogamia and Coleoptera (Melolonthidae); *Liparis*, in Lepidoptera and Orchideæ; *Microphysa*, in Mollusca (Helicidae) and Heteroptera; *Oncidium*, in Mollusca and Orchideæ; *Patula*, in Mollusca and Lepidoptera; and *Corydalis*, in Neuroptera and Phænogamia. In such cases, unless a synonym can be brought forward for use, I should be disposed to alter the termination or otherwise amend the later name, instead of proposing an entirely new one.—T. D. A. COCKERELL, West Cliff, Custer Co., Colorado, June 16th, 1888.

Phyllodoce in Annelida and Phænogamia is another duplication.—F. A. LEES.

Lincolnshire Natural History.—Co-operation in collecting information respecting the MARINE MOLLUSCA of Lincolnshire is desired. Lists and specimens may be forwarded to the care of Mr. H. WALLIS KEW, 19, Stonenest Street, Tollington Park, London, N.

NOTE—MAMMALIA.

Capture of a Seal in the Aire at Rawcliffe.—A short time ago a large Seal made its appearance in the Aire at Rawcliffe, having come up the Ouse. It was first seen passing through Hook Bridge. After rounding Howden Dyke, it was lost sight of, but reappeared in passing Boothferry, and was followed from Airmyn to Rawcliffe by a crowd of people on the banks. At Rawcliffe it was shot, and it afterwards drifted with the tide towards Howden Dyke Sands, where it stranded. It was found to be a large dog seal, measuring six feet from nostrils to tail. It was skinned by some of the villagers, and the skin had no defect but the gunshot wound.—T. BUNKER, Goole, 24th March, 1888.

NORTH OF ENGLAND SPECIMENS IN THE BRITISH COLLECTION AT THE BRITISH MUSEUM.

T. D. A. COCKERELL, M.C.S.,
West Cliff, Custer County, Colorado, U.S.A.

FOR many years, since they were removed from their old quarters in Bloomsbury, the specimens illustrating the fauna of these islands have been inaccessible to the public gaze, and it was not until a short time ago that the British room was opened, and the now much-improved collections made visible. On one of my visits I went carefully through the entire collection, and noted all the north-country specimens, thinking that it might interest the northern naturalists to know how they were represented in the Museum. I use the Museum nomenclature throughout, any other being indicated in square brackets.

MAMMALIA.

There is the well-known tail-less cat from the Isle of Man, a fine specimen, and a *Halichærus gryphus* from the Farne Islands (P. J. Selby).

BIRDS.

<i>Anser brachyrhynchus</i> , Lancs.	<i>Tringa canutus</i> and
<i>Bernicla leucopsis</i> and <i>B. canadensis</i> , Cumberland.	<i>Philomachus pugnax</i> , Lincs.
<i>Falco æsalon</i> , Lancs., and a young one from Derbyshire.	<i>Sterna cantiaca</i> , Farne Islands.
<i>Coracias garrula</i> , York.	<i>Tringa subarquata</i> , Lytham, Lancs.
<i>Merula torquata</i> , Yorks.	<i>Himantopus candidus</i> , Lincs.
<i>Pagophila eburnea</i> , Yorks.	<i>Tetrao tetrix</i> , Wallington, Newcastle.

FISHES.

<i>Salmo salar</i> (male), length 46 inches, weight 46 lbs., River Tweed, July.	<i>Brāma raii</i> , Berwick.
<i>Myliobatis aquila</i> , Berwick-on-Tweed (Yarrell Coll.).	<i>Salmo</i> , hybrid between Common River Trout and Sea Trout, Solway.

MOLLUSCA.

These are very nicely mounted on black paper in glass-topped boxes. The collection is fairly complete, but one cannot help regretting much the absence of Dr. Jeffreys' collection, which the authorities refused, and which was subsequently purchased by the Museum at Washington for £50 more than the sum refused by the British Museum, though the collection was essentially a British one, and contained the types of very many British species and varieties. Most of the north-country specimens are from Northumberland, Sunderland, and Scarborough.

NORTHUMBERLAND.

Trophon barvicensis.
Chrysodomus [*Fusus*] *turtoni*.
Chrysodomus norvegicus (with
 egg-capsule on valve of *Mytilus*
modiolus.
Chrysodomus gracilis.
Chrysodomus propinquus.
Liomesus [*Buccinopsis*] *dalei*
 (with egg-capsules).
Buccinum undatum, vars.
Marsenia [*Velutina*] *flexilis*.
Natica montagui.
Natica groenlandica.

Natica islandica (one, broken).
Scalaria trevelyana.
Littorina litoralis.
Acmaea virginea.
Patella vulgata var. *athletica*.
Chiton laevis.
Pupa anglica [*ringens*].
Pupa muscorum [*marginata*].
Vertigo anti-vertigo.
Planorbis glaber [*parvus*].
Scrobicularia piperata.
Montacuta substriata.

SUNDERLAND.

Odostomia unidentata.
Odostomia interstincta.
Eulima bilineata.
Littorina neritoides.
Lacuna pallidula.
Rissoa parva var. *interrupta*.
Rissoa punctura.
Rissoa inconspicua.
Trochus helicinus.

Patina [*Helcion*] *pellucida* var.
laevis.
Chiton cinereus.
Chiton ruber.
Chiton fascicularis.
Philine scabra.
Cylichna cylindracea.
Atys [*Bulla*] *utriculus*.

SCARBOROUGH.

Chrysodomus gracilis.
Natica catena.
Odostomia rissoïdes.
Littorina rudis, and vars. *tene-*
brosa and *saxatilis*.
Littorina litoralis.
Rissoa semistriata.
Trochus montagui.
Acmaea [*Tectura*] *testudinalis*.
Chiton ruber.
Chiton fascicularis.
Aplysia punctata.
Helix hortensis [ooooo and
lutea (123)(45)].
Helix virgata.
Helix hispida [all the *concinna*
 are united with *hispida* in the
 Museum as one species].
Helix sericea [*granulata*].

Helix fusca.
Helix aculeata.
Helix lamellata.
Hyalinia excavata.
Hyalinia nitiaula var. *helmii*.
Vertigo pusilla.
Vertigo substriata.
Limnaea auricularia var. [shaped
 like rather elongate *L. peregra*].
Limnaea peregra var. *sinistrorsa*.
Limnaea peregra var. [*lineata*].
Limnaea glutinosa.
Planorbis nautilus.
Pisidium cinereum.
Pholas crispata.
Mya truncata.
Mya arenaria.
Anomia aculeata.

YORK.

- Bythinia tentaculata*.
Bythinia leachii.
Valvata piscinalis var. *depressa*.
Helix caperata.
Helix fusca.
Helix aculeata.
Helix pulchella.
Helix lamellata.

Stylifer turtoni, Durham.
Aporrhais pespelecani, Yorks.
Littorina rudis var. *jugosa*,
North of England.
Chiton cinereus, Whitby.
Chiton ruber, Cullercoats.
Diaphana [*Utriculus*] *hyalina*,
Cullercoats (J. Alder).
Atya utriculus, Berwick.
Helix nemoralis [var. *libellula*
. . .], Malton (T. Glover).
Helix nemoralis [vars. *libellula*
and *petiveria* 12345], Lytham,
Lancs.
Helix nemoralis 123 × 45, Nor-
ton, Yorks.
Helix hortensis 123 × 45, Mal-
ton, Yorks.
Helix rufescens, Preston (D.
Cooper).
Helix hispida, Preston.
Helix sericea [*granulata*], New-
castle.
Helix rupestris, Yorks.
Hyalinia excavata and *H.*
nitidula var. *helmii*, Preston.
Hyalinia nitidula, Newcastle
(J. Alder).
Hyalinia glabra (Jeffreys),
Preston.
Zua [*Azeca*] *tridens*, Newcastle.
Vertigo edentula, Newcastle
and Preston.
- Hyalinia cellaria*.
Vertigo angustior.
Succinea putris.
Physa fontinalis [very pale
variety].
Planorbis spirorbis.
Ancylus oblongus [*lacustris*].
Sphærium rivicola.

Vertigo minutissima, Durham.
Vertigo substriata, Preston.
Vertigo pygmæa, Yorks. and
Preston.
Clausilia rugosa var. [nearly
smooth], Newcastle; var. *dubia*,
Preston and Yorks.
Acme lineata, Preston.
Limnæa peregra var. [*lacustris*],
Cumberland; var. [small and
thin], Westmorland.
Physa fontinalis, Lake Hawes-
water.
Planorbis marginatus monst.
[*terebrium*], Rochdale.
Planorbis fontanus, Rochdale.
Planorbis dilatatus, Man-
chester.
Ancylus fluviatilis, Westmor-
land; var. [*albida*], near Bolton
Abbey.
Sphærium lacustre, Yorks.
Psidium henslowanum, Pres-
ton.
Solen ensis, Liverpool.
Limnæa glabra, Birkenhead.
Panopæa norvegica, Dogger
Bank.
Anodonta cygnæa var. [*zellensis*],
Liverpool.
Arion ater [var. *albolateralis*],
Isle of Man.

There are also a few species of Mollusca from other districts that I have taken note of, as follows:—

Purpura lapillus [var. *imbri-cata*], Anglesea.

Paludina contecta, Norfolk (the geographical range of this species in eastern England is peculiar, it seems to favour the parts draining into the Wash, but north and south it appears to be extremely rare).

Neritina fluviatilis, Orkneys.

Trochus amabilis, Shetland Islands, five specimens.

Testacella haliotideae, Brighton.

Helix nemoralis, Galway (bleached white, one with a formula 0030₅).

Helix hortensis [var. *lutea* 0030₅ and 100₄₅], Chichester (C. Dickens).

Helix pisana [var. *albida*], Tenby; var. [*alba*], Falmouth.

Helix virgata, var. [*leucozona*], Exmouth.

Cochlicella acuta, Edinburgh (this, as an east-coast locality, is remarkable).

Zua lubrica, Shetland Islands.

Vertigo moulinsiana, Southampton (H. & J. Groves).

Vertigo pygmaea, Suffolk and Norwich.

Succinea oblonga, Battersea (a long series, Mr. Smith does not know aught of their origin, and the locality is so remarkable that I cannot help fancying that it may be erroneous).*

Succinea pfeifferi, Arran and Killarney.

Clausilia rugosa [var. *albinos*], Coggeshall, Essex.

Cæcilioides [*Achatina*] *acicula*, Dublin.

Physa hypnorum (small and almost colourless var.), Killarney.

Planorbis glaber, Dagenham, Essex.

Unio pictorum [large specimens], River Bure, Norfolk.

Unio tumidus var. [*ponderosa*], Highgate.

Limax maximus [var. *ferussaci*], Starston, Norfolk.

Ommatostrephes pteropus, North Sea [a huge species].

ANNELIDA.

Glossiphonia granifera, Northumberland (J. Alder).

Meckelia annulata, Berwick.

Phyllodoce lamelligera, *Pectinaria belgiaca*, and *Arenicola piscatorum*, Berwick Bay.

HYDROZOA.

Plumularia frutescens E. & S., Northumberland (Dr. Johnston).

POLYZOA.

Retepora beaniana King, Northumberland.

ALCYONARIA.

Pennatula phosphorea L., Northumberland.

* Alien to the locality; brought with laid-down mud, as was the case with hundreds of exotic plants between 1850 and 60.—F. A. L.

PORIFERA.

<i>Isodictya permollis</i> Bowerb., Scarborough (Bowerbank collec- tion).	<i>Halichondria panicea</i> Johnst. (id. loc.).
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INSECTA.

Entomologists have not hitherto thought it necessary to affix localities to their specimens in most cases, and so I have none to record. It seems, however, very desirable that each insect should have a locality label, as is always done in other classes of animals.

CRUSTACEA.

<i>Arcturus longicornis</i> Sby., Cullercoats.	<i>Balanus hameri</i> and <i>B. por-</i> <i>catus</i> , on <i>Fusus antiquus</i> , Dogger Bank.
<i>Cypris tristriata</i> Baird, Isle of Man (Rev. H. Stowell).	<i>Balanus tintinnabulum</i> , Scar- borough.
<i>Balanus porcatus</i> DaC., on <i>Mytilus modiolus</i> , Northumber- land.	

NOTES AND NEWS.

Amongst the recent elections to the fellowship of the Geological Society of London we note the name of Mr. J. E. Bedford, the newly-elected President of the Leeds Geological Association.

The annual meeting of the Leeds Geological Association was recently held under the presidency of Mr. C. D. Hardcastle. A report of the year's work was submitted wherein it was stated that the Association is still increasing in strength, extending its influence, and consolidating its position. As some evidence of this, the roll of membership which stood four years ago at 39 is now 105. The autumn and winter were profitably employed in evening meetings for the reading of papers and the exhibition of specimens. The field excursions, which are, without doubt, the backbone of any geological association, have received unremitting attention. The varied geology of our splendid county has thus been extensively studied, with corresponding benefit to those who attended. The attendance at meetings and excursions has been most encouraging. The third part of the 'Transactions' has met with unqualified approbation. Whilst relating with pleasure the progress of this Association, it is gratifying to know that the published accounts of its work have resulted in a strong geological society being formed at Hull, while at Huddersfield a similar step is in contemplation. Leeds has hitherto possessed the only local geological society in Yorkshire, and, it rests with the members to retain the laurels they have won. The duties of the secretary having been too onerous for one individual, it was decided that the treasurership should no longer be a nominal office, but that its holder should now receive all subscriptions and conduct all the financial business of the Association. An assistant secretary was also appointed. The election of the Executive for the coming year resulted as follows:—President, Mr. J. E. Bedford, F.G.S.; vice-presidents, Messrs. T. W. Bell, William Cheetham, C. D. Hardcastle, and B. Holgate, F.G.S.; treasurer, Mr. W. H. Gill, Park Cottage, Stourton, Hunslet; librarian, Mr. C. Brownridge, F.G.S.; council, Professor Green, M.A., F.R.S., Messrs. C. Brownridge, F.G.S., John Hill, E. Hawkesworth, and John Ingleby; assistant secretary, Mr. J. F. Appleby; and secretary, Mr. S. A. Adamson, F.G.S., 52, Wellclose Terrace, Leeds (fifth time of election).

HELIX HORTENSIS AND ITS VARIATION.

GEORGE ROBERTS, M.C.S.,
Lofthouse, Wakefield.

THIS species is more common about Lofthouse than *Helix nemoralis*. The variety with the three upper bands and the two lower fused, making two broad brown bands, and the variety with all the bands fused (*coalita*) are the most prevalent. The type with five bands is not common. Amongst the brown shells a few bandless yellow ones occur, and it is probably from these that the variety *lilacina* is produced. Last year I collected a considerable number of the variety *lilacina*—some of a darkish hue, approaching the brown shells in colour, but many more of the lilac colour from which they are named. Many are rosy-lipped, but this feature is not a constant concomitant of the lilac colour. The base is usually yellow, but I have some in which the base or ground is white. Some are banded, but the banding is generally obscure. The individuals of *lilacina* with the bands clearly defined only count about one per cent. But I am informed that it is unusual to find them banded at all. It is perhaps worth noting that, although the same ordinary colour-varieties, brown and yellow, of *H. nemoralis* are found together—the same as in *H. hortensis*—the lilac variety *studeria* is rarely produced. I have never seen more than one or two specimens from this neighbourhood that could be called lilac or purple. Among the *hortensis* last year I found a small colony of *sub-albida* (shell nearly white), and one specimen among the brown shells with a brown or fuscous lip—the variety named by Von Martens *fusco-labiata*.

NOTE—CONCHOLOGY.

Reappearance of Canal Shells at Agbrigg near Wakefield.—On June 21st I examined the Wakefield and Barnsley Canal at Agbrigg, about a mile from Wakefield, and dredged up about twenty specimens of *Unio tumidus* and ten of *Paludina vivipara*, but none of the latter were full-grown. These two species seem to be plentiful this year, but have been scarce for ten years back. They were in the same places in the canal thirty years since, as recorded by Mr. C. F. Tootal in Morris's 'Naturalist.' Along with the above-mentioned species I found four specimens of *Anodonta anatina*, two of *Bythinia leachii*, two of *Neritina fluviatilis*, and one of *Sphaerium rivicola*. On June 25th I paid another visit to Agbrigg Canal and got a dozen more *Unio tumidus*, six *Paludina vivipara*, six *Sphaerium rivicola*, three *Anodonta anatina*, and two *Neritina fluviatilis*. The shells of four of the *Unio tumidus* are constricted, that is, drawn in or crushed at the lower margin as if they had been jammed and grown a considerable time between two stones. It often happens that several individuals are found together all deformed alike. On June 26th one of the *Paludina vivipara* excluded six young about the size of a small pea.—GEO. ROBERTS, Lofthouse, June 27th, 1888.

[Mr. Roberts mentions Mr. Tootal's record as being in Morris's 'Naturalist.' I have not, however, been able to find his List of Wakefield Shells in that journal, or in any other publication to which I have access. Can any reader state definitely where Mr. Tootal's list did appear?—W.D.R.]

A NEW MANUAL OF BRITISH BIRDS.

An Illustrated Manual of British Birds. By HOWARD SAUNDERS, F.L.S., F.Z.S., &c. With illustrations of nearly every species. London: Gurney and Jackson, 1, Paternoster Row. Parts 1, 2, and 3, 1888.

Those who are familiar with the literature of the general subject of British ornithology will admit that the student of our avifauna is now well supplied with most excellent text-books. The last few years have witnessed the completion of the fourth edition of Yarrell's standard book, and of the issue and completion of Mr. Seebohm's extremely useful work on British Birds, with coloured illustrations of their eggs; then we have now appearing at intervals Lord Lilford's excellent coloured illustrations, which form a most desirable companion to either of the books just named, and to which we have had from time to time to speak of in high terms of praise in these pages. These are fairly exhaustive, and somewhat bulky and expensive works, hence a manual on the subject, giving in an epitomised form all that it is essential the field-naturalist and student should know about our feathered animals—their plumage in all seasons and ages, their life-history, their distribution at home and abroad—in as concise a manner as possible, is, and has been for many years, a great desideratum. Such a work commanding the appreciation of naturalists has not, we believe, appeared since the excellent little volumes of Mr. Macgillivray, issued in 1846. The book now under consideration supplies this want, and supplies it admirably. The production of such a book requires for its successful compilation an accurate and well-read author, and it is a matter for sincere congratulation that such a really excellent ornithologist has been secured for the task. We are well aware that Mr. Howard Saunders requires no recommendation at our hands, but some of our readers are not ornithologists, and we would remind these that Mr. Saunders edited Volumes III. and IV. of the last edition of Yarrell's 'British Birds' in a fashion that earned for him the gratitude of all British ornithologists; for six years, too, Mr. Saunders filled the honourable and most important position of one of the editors of the 'Ibis,' the leading journal of scientific ornithology, and it is only just to him to say that during his term of office the high standard of excellency which has always characterised the pages of that classical publication has been most fully maintained. It must be manifest to all that such a desirable book by such an excellent author is a most valuable addition to the faunal histories of our islands. It supplies, at a price which places it within the reach of all, a well-illustrated—for nearly all the excellent woodcuts of the complete Yarrell are given—and thoroughly reliable book, one alike indispensable to the naturalist, since it affords him the very essence of British ornithology,

and to the tyro because it is cheap and good. We strongly advise all our readers *interested* in a popular subject to furnish themselves with a copy of this excellent work, of which three parts have appeared. The price is only a shilling per part, and twenty parts are to complete the work.—W. E. C.

NOTES—ORNITHOLOGY.

The Eared Chat not a British Bird.—The reference at p. 24 of the 'Manual of British Birds,' by Mr. Howard Saunders, to my being responsible for including, erroneously, the Eared Chat (*Saxicola albicollis* Vieill.) in the British List of Birds published in the 'Vertebrate Fauna of Yorkshire,' demands from me some notice. The inclusion of this species was obviously due to the unsatisfactory state of the synonymy of several species of *Saxicolina* existing at the time of publication, and which is alluded to by Mr. Saunders and explained *ut sup.* I was aware that *Saxicola stapazina* had occurred in Lancashire, and on referring to that species in Mr. Dresser's admirable work on the 'Birds of Europe' (ii. p. 203) found that the Black-Eared Chat was there so named. In 1881, just as we were going to press, there appeared Mr. Dresser's 'List of European Birds,' in which the nomenclature had been revised to date. In this list *stapazina* had no place, but the Black-Eared Chat—the *stapazina* of the 'Birds of Europe'—appeared as *Saxicola albicollis* (Vieill.), and thus found its way into our list. I feel in duty bound to make this somewhat detailed explanation, as attention has also been called elsewhere to my responsibility for the addition of a bird to the British list which has not occurred in our islands.—W. EAGLE CLARKE, Edinburgh.

Nesting of the Hawfinch near Newcastle.—You will be glad to learn that the Hawfinch has again successfully nested at Axwell Park, the seat of Sir Henry Clavering, on the Derwent. Mr. Battensby, the joiner on the estate, told me that three nests of young birds were now on the wing.—THOS. H. HEDWORTH, 31, Spoor Street, Dunston-on-Tyne, July 2nd, 1888.

The Solan Goose near Bridlington.—In the 'Bridlington Free Press' is a paragraph that, as Mr. R. H. Veitch, gamekeeper at Sewerby House, was going his usual rounds, he observed something lying in a fallow field. On proceeding to it, he found it to be a specimen of the Solan Goose or Gannet (*Sula bassana*); it was dead, and had about twenty yards of fishing-line entangled about it, having swallowed the hook with the line attached. The bird is supposed to be over four years of age, and is in splendid plumage.—MATTHEW BAILEY, Flamborough, April 3rd, 1888.

NOTE—GEOLOGY.

The Evidences of Glacial Action near Ingleton.—In my report on the above subject, written in October last, I surmised that the thickness of the Lower Llandeilo slates at Ingleton does not exceed 6,600—7,000 ft., a thickness deduced from the strike of the Coniston shales below Norber and Crummock Dale on the one hand and that of the same shales on the reverse side of the fold at Ingleton. As these shales, however, are very much contorted and dislocated the apparent strike is not always exact for any great distance. At last a band of scoriaceous grit has, by its recurrence and association with felspathic ash, given me the exact thickness of the Lower Llandeilo, and what I now recognise as massive syenitic Gneiss, as being 5,800 ft. The succession of Lower Silurian folds, I have also identified, the first at Ingleton, the junction of first and second in Crummock Dale and near Gods Bridge; the junction of the second and third close to Horton, Helm Gill, and Gawthrop; and of the fourth and fifth near Sally Beck and Rawthey Bridge. The dip of the Silurian ridge of 'grits' in Crummock Dale must not be taken as an *exact* clue to the dip of the Coniston shales, &c., below, owing to a considerable degree of unconformity between the Upper and Lower Silurians. In relation to the term 'grits,' I must add that I do not for a moment raise the question as to the ridge not being an equivalent of grits found elsewhere, but personally, I must refuse to call a rock 'grit' when it presents no lithological character of a grit.—ROBERT B. BALDERSTON, Ingleton, July 28th, 1888.

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WESTMORLAND AND ITS NATURAL HISTORY.

The Westmorland Note-Book and Natural History Record. A quarterly magazine, in two divisions. Demy 8vo., 3s. per annum. London: Elliott Stock. Kendal: E. Gill. Part I, March 1888. Part II, June 1888.

Although this new serial, combining Natural History with notes on local Archæology, Dialect, and Folk-lore, might be thought, with some warrant, to trench upon the province of *The Naturalist* as the organ of record for the eleven northern counties of England, we have, nevertheless, nothing but commendation for the actual performance of the natural history work in the two first parts before us. Agreeably unusual, both in the inception and the realisation, the projectors appear to have been far-sighted and felicitous; they have had clearly before them at start what was wanted, and that want they have commenced to supply with care and perspicuity.

Each part of the Note-book is divided into two sections—paged separately—with the hindmost of which, the Natural History Record, we are, of course, only concerned. It fills some fifty clearly-printed pages, embellished by a judicious use of thick-letter type for species-names, in the two parts; and is edited by Mr. J. A. Martindale, whose name is a quite sufficient guarantee that precision of statement and scrupulous accuracy in matters of detail, will be preferred to that more showy copiousness which is so often, alas! the vitiating factor in natural history lucubration. The papers are somewhat fragmentary (e.g., the isolated, tentative or rather provisional ‘List of Sedges,’ which might have been made fuller for District 6 at least by easy references) as must needs be where the *raison d’être* of the whole endeavour is ‘to work out in full’ what is far from thoroughly known at present; but each paper is, after all, a genuine instalment—a stone of known weight and proportion added to the cairn that shall some day by such additions become a lasting monument to the labours of the early workers. The first paper is, appropriately, ‘Our District,’ in which the editor briefly sketches its salient features, and it is accompanied by a map (on a sufficient scale, 4 miles to the inch) of the Watsonian comital area 69, that is to say, Westmorland with that detached portion of Lancashire known as Furness, which—drained by the Leven, Crake, and Duddon—is phyto-geographically one with it. This map is a good one, showing with commendable clearness the six very unequal river-basin districts into which the area is divisible. The limitations of the Tees district as regards the Troutbeck tributary seem not to be quite accurately indicated by the coloured area, but this is the only shortcoming apparent.

An instalment of a List of the Larger Kendal Fungi (by Rev. C. H. Waddell), enumerating 138 species down to *Dacrymyces*; a List of

the Cambrian and Silurian Fossils in the Kendal Museum (by Rev. Geo. Crewdson); a List of the Birds of the Lake District (by Mr. John Watson)—a too-brief instalment again, and some Meteorological Returns, complete the tale of papers in the two first parts.

In conclusion, we can sincerely aver that this serial serves a well-considered end, and should reap the success it plainly deserves. It only remains to say—for our part without jealousy—*Floreat*.

NOTES—ORNITHOLOGY.

Black-throated Diver near Bingley.—I saw a Black-throated Diver (*Colymbus arcticus*) a week or two ago, which had been shot at Manywells the last winter. It had not attained its full plumage, being probably in its second year's moult, and is the only specimen recorded for this district.—E. P. P. BUTTERFIELD, Wilsden near Bingley, April 10th, 1888.

Alarm Note of the Woodcock (*Scolopax rusticola*).—On or about June 15th, last year, I was walking in a wild place some six or seven miles from Dumfries, and about two from New Abbey, where it was said a hamlet had once found a site, and in which what might have been the ruins of dwellings and their containing enclosures were mingled up with grassy glades and straggling groups of natural wood-growth and underwood, when my attention was arrested by frequent bird-notes reminding one of the cry of the Curlew when suddenly disturbed, and yet, with all their resemblance, distinctly different. Curlews were there certainly; for the wood-grown space I was in was separated on one side by one of the customary dry granite walls of the district from the moor lying at the foot of a considerable range of granite hills. I was looking for a plant or two I was told grew near, or for a butterfly or the like, for some very juvenile naturalists of my acquaintance, and I thought I saw a Woodcock go down under a holly-bush about ten yards from where I was standing. Going forward quickly to see if I could flush it, I disturbed rather a good moth, which flew out into the open and settled among the rough herbage of what would have been a damp or boggy place but for the prevalent droughty weather. Pursuing it, I was immediately greeted with a repetition of the notes which had caught my attention shortly before. They came from a pair of Woodcock which were flying about just above the tops of the trees, precisely as do the Lapwing, the Redshank, or any other of the birds whose habit it is to 'mob' the intruder upon their nesting precincts. During some fifteen or twenty minutes this was continued, only pausing when I went back under cover of the woodland growth. The moment I reappeared in the open, these vociferous attentions were renewed, both birds coming within twenty yards of me times without number. I was already aware that the Woodcock bred in considerable numbers in some woods barely a mile distant, but I had never before seen anything like this on the part of a nesting Woodcock. Certainly on one occasion, about three years ago, I had heard a Woodcock giving utterance to a series of short, rather peculiar, notes (two or three of them emitted in quick succession) while on the wing. There was some pigeon-shooting going on in a low meadow about a third of a mile from where I was standing, and on the hill-side rising from this meadow to the level of our Danby 'Low Moors,' was a five-and-forty acre bit of young wood which has always been a safe place for a cock or two if there were any in the country. The Woodcock I speak of continued to fly round and round in wide circles for a considerable space of time, and was 'left' so flying. It came within shot of me half-a-dozen or half-a-score times, and during the whole space of time I continued to observe it, the notes I have mentioned continued to be uttered at intervals of a minute or two. I have not seen any notice of either of these habits of the Woodcock in any account or monograph of the bird I have met with, and they may be worth recording. The low note emitted as the birds fly in the gloaming to their feeding-places seems to be quite distinct from either of those I have here noticed.—J. C. ATKINSON, Danby-in-Cleveland.

THE YORKSHIRE NATURALISTS' UNION AT ROBIN HOOD'S BAY.

THE excursion to Robin Hood's Bay, arranged for Monday, July 16th, had long been anticipated by the members of the Union, particularly those in the geological section, with the liveliest feelings of pleasure. Alas! when the long expected day arrived, our phenomenal summer dealt hardly with those who, many of them from a distance, had travelled to the classic region of the Peak, the southern cheek of Robin Hood's Bay. All day the rain fell most heavily and relentlessly, and worse, a dense sea fog obscured the majestic cliffs and beautiful scenery which they had hoped to explore. Upon arrival at Peak Station, the whole party, with two or three exceptions, ranged themselves under the leadership of the President of the Union (Mr. W. H. Hudleston, M.A., F.R.S.), and attempted, in spite of the terrific rain, a little field work, but were very soon compelled to discontinue and return to Scarborough. Upon arrival it was judged best to resort at once to the Museum of the Scarborough Philosophical Society, where the members thoroughly inspected the grand collection of geological specimens, natural history objects, and antiquities there, by the kindness of Mr. Phillips, thrown open to them. The typical specimens of the Oolitic and Liassic fossils of the district were closely examined, and one object which attracted much attention was a fine specimen of the egg of the Great Auk, which on account of its rarity is now of such great value. One most pleasurable reminiscence will be the examination of the specimens collected by William Smith, 'the father of geology,' for many years a resident in the neighbourhood.

No sectional meetings were held, but the general meeting was duly held with the President of the Union in the chair. The following new members were then unanimously elected: Miss Gertrude Walker, Lees House, Thornhill Edge, Dewsbury; J. W. Woodall, M.A., F.G.S., St. Nicholas' House, Scarborough; Oswald Dawson, Caledonian House, Leeds; J. W. Abram, Foston, via Hull; and Francis Augustine Grimston, Mosergh, Kendal. Upon the roll of Societies being called over, it was found that representatives from the following were present—Leeds Naturalists' Club, Goole Scientific Society, York and District Field Naturalists' Society, Leeds Geological Association, Bradford Scientific Association, Malton Naturalists' Society, Keighley Scientific and Literary Society, Ackworth School Natural History Society, Scarborough Philosophical Society, and Hull Geological Society. The Rev. E. Maule Cole, M.A., President of the Geological Section, then moved a vote of thanks to the gentlemen who had conducted the excursion, viz., Messrs. W. H. Hudleston, M.A., F.R.S., M. B.

Slater, and Thomas Bunker, and remarked that after all the discomfort and disappointment, the geologists had had an excellent opportunity of studying denudation. The resolution was seconded by Mr. S. Chadwick, and carried by acclamation. The President, in returning thanks, said that of course it would have been much more satisfactory if the weather had permitted the programme to be fully carried out, for at no point in England could grander geological lessons be obtained. He paid a tribute to those who had accompanied him thus far, despite the adverse circumstances, and complimented them on their true Yorkshire pluck and spirit. He then alluded in most sympathetic terms to the absence of their valued senior secretary, Mr. W. Denison Roebuck, F.L.S., who had met with a severe street accident, causing a fracture of the left thigh, and was deeply gratified to inform them that Mr. Roebuck was progressing very satisfactorily. Mr. S. A. Adamson, F.G.S., then proposed, and Mr. M. B. Slater seconded, a vote of thanks to the Scarborough Philosophical Society, for the use of the museum and for the hearty kindness with which they had been received. The museum that day, in addition to its classic stores of geology, had been a real 'refuge in the storm.' Mr. Phillips responded for the Scarborough Society, and gave a sincere welcome to the members present. He too, deeply regretted the unfortunate weather as he was sure that if the whole programme could have been carried through, the visit to the Peak would never have been forgotten. He urged that another visit should be made. A vote of thanks was then passed to the gentlemen who had contributed to the excursion circular, viz., the President, Messrs. T. Newbitt, J. T. Sewell, W. Denison Roebuck, W. Cecil Scott, and the Rev. W. C. Hey. The sectional reports were then presented.

For the Vertebrate Zoology section, Mr. Thomas Bunker, the sectional officer present, reported that his party consisted of himself, but that the weather being so bad, very few birds had been observed; amongst those seen were mentioned the Jackdaw, Blackcap, Yellow Bunting (with nest and eggs), Blackbird, Thrush, Starling, Lapwing (already in flocks), Hedge Accentor, Sparrow, Whitethroat, and Meadow Pipit.

For the Botanical section, Mr. M. B. Slater of Malton, one of the secretaries, reported:—From the list of plants seen, it will be observed that the flora of the district, although varied, is composed mostly of plants of general distribution throughout our island. The soil of the district examined is of a stiff clayey nature, retaining moisture, and evidently fairly fertile by the variety of plants seen in so small an area. Only the cliffs and the lower portion of the valley were explored; the higher ground was to have been gone over on Monday;

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little, however, could be done, owing to the torrents of rain and dense fog, which fairly caused the visitors to beat a retreat.

Fortunately, some few of the members got to Robin Hood's Bay on Saturday, which enabled them to explore some portion of the district. The cellular cryptogams seen from the following list are, like the flowering plants, mainly of general distribution. The district is evidently not so rich in variety, and has not the rare plants in this group that are met with in the Esk valley and its tributaries.

FLOWERING PLANTS.

<i>Ranunculus auricomus.</i>	<i>Sanicula europæa.</i>
<i>Ranunculus acris.</i>	<i>Bunium flexuosum.</i>
<i>Ranunculus repens.</i>	<i>Heracleum sphondylium.</i>
<i>Cardamine pratensis.</i>	<i>Chærophyllyum sylvestre.</i>
<i>Sinapis arvensis.</i>	<i>Chærophyllyum anthriscus.</i>
<i>Capsella bursa-pastoris.</i>	<i>Galium cruciata.</i>
<i>Polygala vulgaris.</i>	<i>Galium aparine.</i>
<i>Lychnis vespertina.</i>	<i>Asperula odorata.</i>
<i>Lychnis diurna.</i>	<i>Sherardia arvensis.</i>
<i>Stellaria graminea.</i>	<i>Eupatorium cannabinum.</i>
<i>Stellaria holostea.</i>	<i>Tussilago farfara.</i>
<i>Cerastium glomeratum.</i>	<i>Hieracium pilosella.</i>
<i>Sagina procumbens.</i>	<i>Leontodon hispidus.</i>
<i>Hypericum perforatum.</i>	<i>Hypochæris radicata.</i>
<i>Linum catharticum.</i>	<i>Crepis virens.</i>
<i>Oxalis acetosella.</i>	<i>Carduus lanceolatus.</i>
<i>Ononis arvensis.</i>	<i>Carduus palustris.</i>
<i>Medicago lupulina.</i>	<i>Myrrhis odorata.</i>
<i>Trifolium pratense.</i>	<i>Melampyrum pratense.</i>
<i>Trifolium repens.</i>	<i>Erica cinerea.</i>
<i>Anthyllis vulneraria.</i>	<i>Vaccinium myrtillus.</i>
<i>Lotus corniculatus.</i>	<i>Lysimachia nemorum.</i>
<i>Centaurea nigra.</i>	<i>Myosotis sylvatica.</i>
<i>Vicia hirsuta.</i>	<i>Scrophularia nodosa.</i>
<i>Vicia sepium.</i>	<i>Veronica chamædrys.</i>
<i>Lathyrus pratensis.</i>	<i>Veronica beccabunga.</i>
<i>Spiræa ulmaria.</i>	<i>Stachys sylvatica.</i>
<i>Geum rivale.</i>	<i>Teucrium scorodonia.</i>
<i>Agrimonia eupatoria.</i>	<i>Ajuga reptans.</i>
<i>Fragaria vesca.</i>	<i>Prunella vulgaris.</i>
<i>Potentilla reptans.</i>	<i>Daphne laureola.</i>
<i>Epilobium hirsutum.</i>	<i>Orchis maculata.</i>
<i>Epilobium parviflorum.</i>	<i>Epipactis latifolia.</i>
<i>Circæa lutetiana.</i>	

SEDGES AND GRASSES.

<i>Carex vulpina.</i>	<i>Festuca pratensis.</i>
<i>Carex sylvatica.</i>	<i>Lolium perenne.</i>
<i>Trisetum flavescens.</i>	<i>Dactylis glomerata.</i>
<i>Holcus lanatus.</i>	<i>Arrhenatherum avenaceum.</i>
<i>Alopecurus pratensis.</i>	<i>Poa trivialis.</i>
<i>Cynosurus cristatus.</i>	

FERNS.

<i>Lastrea filix-mas.</i>	<i>Scolopendrium vulgare.</i>
<i>Lastrea dilatata.</i>	<i>Athyrium filix-fœmina.</i>
<i>Polystichum aculeatum.</i>	<i>Equisetum maximum.</i>

MOSESSES.

<i>Trichostomum tophaceum</i> Brid.	<i>Rhynchostegium confertum</i> Dicks.
<i>Barbula muralis</i> L.	<i>Amblystegium serpens</i> L.
<i>Barbula unguiculata</i> Dil.	<i>Hypnum filicinum</i> L.
<i>Ulota bruchii</i> Hornsch.	<i>Hypnum commutatum</i> Hedw.
<i>Orthotrichum affine</i> Schrad.	<i>Hypnum molluscum</i> Hedw.
<i>Bryum capillare</i> L.	<i>Hypnum cuspidatum</i> L.
<i>Bryum pallens.</i>	<i>Hypnum purum</i> L.
<i>Weisia viridula</i> Brid.	<i>Hypnum resupinatum</i> Wils.
<i>Thuidium tamariscinum</i> Hedw.	<i>Hypnum stellatum</i> Schreb.
<i>Brachythecium rutabulum</i> L.	<i>Hylocomium triquetrum</i> L.
<i>Eurhynchium striatum</i> Schreb.	<i>Hylocomium loreum</i> L.
<i>Eurhynchium prælongum</i> Dill.	

HEPATICÆ.

<i>Fegatella conica</i> (L.).	<i>Jungermania riparia</i> Tayl.
<i>Frullania dilatata</i> (L.).	<i>Jungermania turbinata</i> Rad.
<i>Radula complanata</i> (L.).	<i>Aneura sinuata</i> Dicks.
<i>Lophocolea bidentata</i> (L.).	<i>Pellia epiphylla</i> (L.).
<i>Kantia trichomanis</i> (L.).	

The sections of Conchology, Entomology, and Micro-Zoology and Micro-Botany were not represented.

For the Geological section, the President of the Union delivered a most instructive address, drawing attention to the development of the strata in the district visited, and successively describing the Sandstone or Moor Grit capping the cliffs, the Scarborough or Grey Limestone series, the Middle shales and sandstones, the Millepore bed, the Lower Estuarine shales and sandstones, the Dogger (with its divisions—the true Dogger, including the *Nerinea* bed, the Yellow sandrock and the Grey sandrock), the 'striatulus' or passage beds, and the alum or 'communis' shales of the Upper Lias. He also drew attention to the stratigraphy of the coast between the mouth of the Tees and the Humber, where, passing southwards, we come upon newer strata, with a slight dip to the south-east, except where faults break the continuity, of which that at the Peak is the most remarkable.

Mr. Adamson, F.G.S., the senior secretary of the section, also thus reports upon the work actually accomplished during the day. Upon arrival at the Peak Station Mr. Hudleston would, considering the storm then beating, have advised the total relinquishing of the programme, but at the urgent entreaties of several members he consented to lead the way down the line and visit the Crag Hall Quarry, of course, further willing, if possible, to carry out the full day's work. Accordingly the path was taken along the line to show the effects of

the great fault at the Peak. No clear section of this was seen beyond the decided curve of the beds of the Middle Estuarine sandstones, which are thrown, a little further on, against the beds of the Upper Lias. Mr. Hudleston still further indulged the enthusiastic hammermen by visiting the Crag Hall Quarry, where a notable section was examined and a lucid description given. This quarry is simply a giant excavation left by the alum-workers of former days, when the shales of this coast were valuable, commercially considered. Now, by the rapid development of modern chemistry, the residuals from our gasworks have entirely supplanted this industry of the Yorkshire coast, and hence we see the immense heaps of shale, débris, and calcined material left. And now an arduous ascent was made from the railway, and shortly afterwards, by an unctuous and yet precipitous descent, the Crag Hall Quarry was inspected.

The Crag Hall section is a very instructive one. Here were shown the Lower Estuarine shales and sandstones resting upon the Dogger series, which again rested upon the alum shales, or 'communis' beds of the Upper Lias. The 'striatulus' beds, which may fairly be considered as passage beds between the Oolite and the Lias, are wanting in this quarry, and, indeed, the Dogger, which at the other side of the fault attains a thickness of nearly 100 ft., including the Yellow and Grey sandrocks, is here attenuated to 4 ft. only. This remarkable difference in the thickness of the strata in such a short distance is a most important geological problem, and must be duly considered. To use the words of the President, 'it can hardly be supposed that, the distance being short, this is due to non-deposition. It really looks as if the bed of the Liassic sea was lifted on the upthrow side of the great fault, and thus brought under the influence of denuding currents, or that the downthrow side sank so as to be preserved from such action. It is a remarkable coincidence that on the westward or upthrow side of the great fault there should be such a disappearance of beds in so short a space. The subject, when more thoroughly investigated, may serve to throw more light upon the changes of level and of other physical conditions which marked the close of the Liassic epoch and the commencement of the Oolitic.' The heavy rain now beat more pitilessly than ever, and with extreme reluctance and regret a return had to be made to the station, although if Mr. Hudleston had considered it safe to descend the wet and slippery shales to the shore, the members would loyally have followed him. Yet enthusiasts, if wise, will always submit to experience and knowledge; therefore the train for Scarborough was regained. It was certainly a most acute disappointment that, from the violence of the storm, the most

valuable part of the day's work had to be deferred, but still we must look to a better and brighter day, when Mr. Hudleston will once again give Yorkshire geologists the benefit of his experience, and thoroughly describe to them that wonderful feature in Yorkshire geology, the Peak. This immediate district must, without fail, be made the centre of another excursion.

Mr. Stears, of Hull, and Mr. Phillips, of Scarborough, respectively moved and seconded a vote of thanks to the President of the Union for his valuable address, and for the great kindness he had shown in coming so far to give them the benefit of his experience. This was enthusiastically carried, after which the President moved, and the Rev. E. Maule Cole, M.A., seconded, a vote of thanks to Messrs. Adamson and Scott for the admirable way in which, during the enforced and regretted absence of Mr. Roebuck, they had conducted general matters, whereby the circular had not been delayed, nor the interests of the Union caused to suffer. Mr. Adamson, in replying, stated he would do his utmost for the Union in this emergency, and would assist his valued and dear friend Mr. Roebuck in every way possible. The members afterwards had tea together at Bearup's Station Hotel.

NOTES—ORNITHOLOGY.

Notes from Flamborough.—Great arrivals of our summer visitants this season on the Headland, Flamborough: Redstart (*Ruticilla phaniceus*) and Wheatear (*Saxicola oenanthe*) first seen April 6th; no more arrivals for several days. April 24th, I saw four Swallows (*Hirundo rustica*); April 25th, first appearance of the Cuckoo (*Cuculus canorus*); April 26th and 27th, large numbers of the Flycatchers were to be seen in nearly every field; April 28th, great arrivals of the Ring Ouzel (*Turdus torquatus*): April 29th, I also observed the Swift (*Cypselus apus*).—MATTHEW BAILEY, Flamborough, May 12th, 1888.

Bittern near Ripon.—I saw a fine stuffed Bittern (*Botaurus stellaris*) late in January of 1887, and I was told that it had been shot during the first week of January 1887, at Norton Conyers near Ripon.—H. S. BYERS, Stockton-on-Tees.

The Ornithology of Skiddaw, Sca Fell, and Helvellyn.—As a student of the ornithology of the Lake district, I have waited for weeks for the appearance of Mr. Watson's long-promised paper. I felt certain that his 'peculiarly favourable' opportunities for observation 'during many successive seasons' would supply us with new and interesting facts. My expectations have been realized. I had often wondered where the downy nestling of the common Sandpiper, figured by Yarrell, was captured. It is mentioned in letters of June 28th, 1837, and January 10th, 1838, from Mr. Yarrell to Mr. Heysham, but these letters, now on my table, throw no light on the locality concerned. It is gratifying to learn from Mr. Watson that it was 'from the neighbourhood of these mountains.' I had always supposed, from observation and dissection, that the Peregrine fed entirely on live prey. But we learn from Mr. Watson that this falcon is a carrion-bird, for he tells us at p. 165 that the Peregrines 'benefit' by mortality among the sheep. This is a new light to me, and I am thankful for it. I had always found that the Golden Plover abandoned its gregarious habits in the nesting season, but as Mr. Watson has found a 'nesting colony,' my experience must have been unfortunate. I have never seen the Shag inland, nor is it a common bird on the Cumberland coast. It is therefore due to Mr. Watson to say that he is the first to detect its presence on Crummock Water. I trust that Mr. Watson's ready pen will give us some more of his picturesque sketches of bird-life.—H. A. MACPHERSON.

Naturalist,

NEWTS NEAR WARRINGTON.

SOME time ago we received a copy of Mr. Linnæus Greening's paper on 'British Newts,' read by him before the Warrington Field Club on the 21st January, 1887. It is a most detailed and exhaustive paper, dealing with structure, development, habits, life-history, etc., and from it we take the liberty of extracting the faunistic information which falls within the scope of our journal.

Of the Smooth Newt (*Molge vulgaris*), Mr. Greening says:— 'This newt is the commonest, being found almost everywhere in the British Isles; but at the same time it is exceedingly local; it may be found in one pit, although in the adjoining pits it does not occur. It is never found, so far as I know, in swift running streams or dirty waters. I have taken specimens at Stretton Hill Cliffe, Dallam, Bewsey, Stockton Heath, Walton, Arpley, and Hartford.'

Of the Great Warty Newt (*Molge cristata*), he remarks:— 'This species is not so common as *M. vulgaris*. I have caught it at Frodsham, Stretton, and Hartford, and I have had specimens from Soham and Scarborough. In a pool at Hartford these newts abound, and are of all sizes, from 3 in. to 6 in. long; out of a large quantity taken the majority were small.'

Of the Palmated Newt (*Molge palmata*), it is written:— 'This certainly is the rarest of our British species, though possibly its rarity has been exaggerated, as it has been sometimes mistaken for the common newt (*M. vulgaris*). It had never been recorded as existing in Lancashire till Mr. J. A. Jackson caught in a small mill dam, near Garstang, what were locally thought to be the common smooth newts, and he having kindly brought me a few of these, I found them to be *M. palmata*, and had the pleasure of recording this fact in the 'Zoologist' for June 1886. It is curious that all these newts were caught within an area of two yards square; and that in other parts of the pool the net was tried in vain. I have noticed this peculiarity in many pits, but have been unable to find a perfectly satisfactory reason for it, though it is probably owing to a greater abundance of food and suitable vegetation over that particular area.'

Some of our readers will be interested in Mr. Greening's table of specific characters, which we accordingly reproduce:—

'*Molge cristata* (Great Warty Newt).—Skin covered with minute warty excrescences, ground colour black or dark brown, with black spots. Belly deep orange, with black spots. Throat black, covered with small white spots. Colours of female as male—but distinguished by yellow line along lower surface of tail. Length 5 in. to 6 in. Female in this as in other species larger than male. Summer crests of males broken.

'*Molge vulgaris* (Smooth Newt).—Skin smooth, ground colour dark brown, with black spots. Belly bright orange, with black spots. Throat light yellow, with black spots. Female—ground colour greenish brown, belly pale yellow (which is continued to end of tail on the under side, as in other species), with small black spots. Summer crests of males unbroken. Length $3\frac{1}{2}$ in. to 4 in.

'*Molge palmata* (Palmated Newt).—Skin smooth, ground colour greenish brown, with small black spots. Belly pale yellow, with few black spots. The throat in both sexes is creamy white, and quite free from spots. Female lighter colour than male, characterised by yellow line at base of tail. Summer crests low, dorsal lines very prominent, hind feet of both sexes webbed, much more so in male, which also has truncate tail in summer. Length $2\frac{1}{2}$ in. to $2\frac{3}{4}$ in.'

NOTE—HEMIPTERA.

Hemiptera-Heteroptera in the Isle of Man.—The following were my captures in September 1887, all in the south near Castletown. Although the number of species is small, the individuals of some swarmed, notably *Lygus pratensis* and *Piesma quadrata* in their respective habitats.

Pentatoma verbasci.

Piezodorus lituratus.

Scolopostethus ericetorum.

Stygnocoris sabulosus.

Stygnocoris arenarius.

Piesma quadrata.

Monanthia cardui.

Acalypta parvula.

Miris calcaratus.

Miris lævigatus.

Megalocera erratica.

Lygus pabulinus.

Lygus pratensis.

Lygus kalmii.

Lygus pastinacæ.

Lygus cervinus.

Monalocoris filicis.

Ætorhinus angulatus.

Chlamydatus ambulans.

Psallus sanguineus.

Anthocoris nemorum.

Anthocoris nemoralis.

Nabis ferus.

Nabis rugosus.

Salda saltatoria.

Velia currens.

—JAS. EARDLEY MASON, Alford, Lincolnshire, June 23rd, 1888.

NOTES—LEPIDOPTERA.

Lepidoptera near Halifax in 1887.—The only rare captures made in this district last season were three specimens of *Cynatophora ridens* and one of *Sphinx convolvuli*. *C. ridens* came to light.—G. F. HARDING, 4, Back Crib Lane, Halifax, April 16th, 1888.

Thecla rubi on Barden Moor, Wharfedale.—On Monday, May 21st, I took *Thecla rubi* commonly on Barden Moor. In crossing the moor a few years ago, on the 7th of May, I took an odd specimen about the same locality, which seemed to me a strange habitat for this species, but thought at the time it had got there by accident. The conditions, however, under which the above specimens were taken this year suggested no other alternative than that they had been bred from larvæ fed upon plants on the moor, though a search revealed no plants other than the commoner moorland species. Its presence in any abundance seemed to be confined to one particular spot, my boxes being filled without moving many paces, and they were evidently fresh out.—E. P. P. BUTTERFIELD, Wilsden, May 28th, 1888.

SOME INGLEBOROUGH COLEOPTERA.

J. W. CARTER,

Entomological Recorder, Bradford Naturalists' Society, etc.

DURING two ascents of Ingleborough—one on the 11th of April, 1884, in company with Mr. H. T. Soppitt, of Bradford, and Mr. J. A. Butterfield of Lewisham, and again on April 3rd, 1885, also in company with Mr. Soppitt—several species of coleoptera, some of exceptional interest, were collected, the following list of which may be of interest to some of the readers of *The Naturalist*.

Those marked * are new county records.

Carabus arvensis F. One on the side of Ingleborough at an elevation of about 2,000 ft., April 1884 (J.A.B. and H.T.S.). Only once previously taken in the county, viz., at Strensall Common (Ent. Trans. Y. N. U.).

Notiophilus aquaticus L. In boggy ground at the foot of Ingleborough, April 1885. A blue-black variety occurred with the type.

Notiophilus palustris Duft. One at the base of Ingleborough, April 1885. This and the preceding species are new to the north-west portion of the county.

Notiophilus biguttatus F. Common about Ingleborough and the neighbourhood, 1884 and 1885.

Nebria gyllenhalii Sch. Very abundant on the summit of Ingleborough, April 1884. Amongst them were three or four examples with the elytra 'entirely rust-red,' a form mentioned by the Rev. Canon Fowler in his admirable work on 'British Coleoptera.'

Clivina fossor L. At the base of Ingleborough, 1885.

***Patrobus assimilis** Chaud. In great abundance on the summit of Ingleborough, April 1884. I think that everyone who has examined large numbers of this form from varying altitudes cannot but agree with Mr. Fowler in regarding it as 'merely a highland variety' of *P. excavatus* Payk. I have taken it at an elevation of from 900 to above 2,000 ft., those taken at the highest point being the most pronounced *assimilis*, while at lower elevations, forms not agreeing exactly with either, but partaking of the characters of both, are often met with.

Pterostichus nigrita F. Common in the neighbourhood of Ingleborough, 1884 and 1885.

***Pterostichus æthiops** F. One each by Mr. Soppitt and myself, at the base of Ingleborough, April 3rd, 1885.

Badister bipustulatus F. One given me by my friend, Mr. T. Hey of Derby, taken on Ingleborough, 1887.

Calathus melanocephalus L. Common in the neighbourhood of Ingleborough.

***Var. nubigena** Hal. On the sides and at the foot of Ingleborough, 1884 and 1886.

Anchomenus albigipes F. At the foot and in the neighbourhood of Ingleborough, common.

Byrrhus fasciatus F. Not uncommon on the summit of Ingleborough, 1884.

NOTE—LEPIDOPTERA.

Stigmonota dorsana at Axwell.—On the 27th May I observed several specimens of a pretty little Tortrix (*Stigmonota dorsana*) on the wing, in a field at Hagg Hill, near Axwell.—THOS. H. HEDWORTH, 31, Spoor Street, Dunston-on-Tyne, July 2nd, 1888.

NOTE—COLEOPTERA.

Carabus glabratus and other Beetles in the Lake District.—Amongst a number of beetles kindly given me by our energetic friend, Mr. W. West, F.L.S., and taken by him in the Lake District in June 1884, were four specimens of the rare *Carabus glabratus* Payk., three of which were taken on Scawfell Pike, and one on Serjeant Mann, 2,000 ft. There were also several examples of *Nebria gyllenhalii* Sch., *Carabus catenulatus* Scop., very fine, *Geotrupes sylvaticus* Panz., *Lema cyanella* F., and *Corymbites cupreus* var. *æruginosus* F., all taken on the above-mentioned hills and on Helvellyn. For the names of some of them I am indebted to the kindness of Dr. Ellis, F.E.S., of Liverpool, who is ever willing to assist his co-workers.—J. W. CARTER, Bradford, July 14th, 1888.

NOTES—BOTANY.

Varieties of Viola odorata.—I have found the red variety alluded to by Mr. Gain, in South Notts. in two localities, but in very limited numbers in each place. The red colour is very similar to that in the common Mallow. The white and blue varieties are abundant with us on the heavy lands, but the white is most plentiful. I believe the blue to be decreasing.—F. B. WHITLOCK, Attenborough, Notts., 3rd July, 1888.

Ceterach officinarum in Wensleydale still.—A friend of John Percival's having stated that specimens of the above rare Yorkshire fern were growing on the masonry of a certain bridge, Mr. Percival last week (July 1st—7th) visited the locality, and had the satisfaction of confirming the report. It would be unwise to indicate the spot more precisely than this: the station is in the Askrigg (middle) third of Wensleydale, and it is not the Coverdale-head locality recorded by Mr. M. B. Slater, nor is it the same as the Appersett Bridge and wood-yard wall station of Baker's 'North Yorkshire.' In this latter place it has long been extinct, and in Mr. Percival's station it may possibly have been planted. I examined both walls of the bridge many times when resident at Hawes, and am quite positive it was not there in 1884-6. Mr. Percival adds the satisfactory information that there are six or seven roots of the fern, and that being high up on the wall, it would require a ladder to extirpate it.—F. A. LEES.

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Papers and records published with respect to the Natural History and Physical Features of the North of England.

MOLLUSCA, 1886 and 1887.

THE present instalment, containing 183 titles of papers, is for the two years 1886 and 1887, and covers a period of much greater conchological activity than the preceding two years, for which the Bibliography was published at pages 144-149 of this journal for May 1886. Several of the papers are of high interest, notably the very complete county-lists for Lancashire and Lincolnshire, two areas hitherto much neglected conchologically, and several lists for smaller areas, mostly in Yorkshire.

The Marine Shells—although they are the subject of five times as many papers as in the previous biennial period—still account for but an infinitesimal part of the attention which has been paid to Conchology in our North Country, as only twenty-one of the titles contain any reference to them, and not one of these is of any particular importance. The twenty-one titles are those by Anon. [not signed], T. D. A. Cockerell (three titles), W. Shewell Corder, R. D. Darbishire, B. S. Dodd, W. Gain, Carleton Greene, W. H. Heathcote, W. A. Herdman (two), W. C. Hey (three), H. Wallis Kew (four), J. T. Marshall, and P. L. Simmonds.

Since former Bibliographies were published, the opinion of the Editors as to the desirability of including titles of papers printed in *The Naturalist* has changed, and they now think that each Bibliography ought to be a full and complete record of titles for the period of time which it includes. Accordingly, the present instalment embraces not only the complete record for the two years 1886 and 1887, but also the titles of papers published in this journal for 1884 and 1885, and designedly omitted at the time from the Bibliography published for those years. This new departure having been taken, the present and former instalments, taken together, present a full and complete record of the conchological literature of the eleven northern counties (or eighteen vice-counties) for the four years they embrace.

Conchological work being based, like botanical, on the recognition of the equalised comital areas defined in 'Watson's Cybele Britannica,' it will not be out of place here to enumerate those with which this journal concerns itself:—Isle of Man, Cumberland, Westmorland with Furness, Lancashire West, Lancashire South, Cheshire, Derbyshire, Nottinghamshire, Lincolnshire South, Lincolnshire North,

Yorkshire South-East, Yorkshire South-West, Yorkshire Mid-West, Yorkshire North-West, Yorkshire North-East, Durham, Northumberland South, and Cheviotland. To these areas the amount of attention paid by conchologists has been very unequal, for while Lancashire and Yorkshire, Lincolnshire, Notts., and Cheshire have of late been ardently investigated, a deep lethargy seems to have settled on the Northumbrian area which of old could boast of Alder, Hancock, Johnston, and others of like fame, while Cumberland seems to depend upon the annual reporting of Miss Donald's additions, and the Isle of Man and Derbyshire, in spite of their accessibility and attractiveness, receive next to no attention.

ANON. [not signed].

York S.E.

[*Helix lactea* at Filey, Aug. 5th, 1885]. Young Nat., Jan. 1886, vii. 15 (copied from N. H. Journ., Dec. 15th, 1885, ix. 187).

ANON. [signed L. R. and B. B. L. T.].

York N.E., York N.W.

York, Bootham. School News [*Helix arbustorum*, *H. caperata*, and *H. ericetorum* taken at Castle Howard, and *H. rufescens* and *H. lapicida* in Wensleydale, by O. Morland]. Nat. Hist. Journ., June 15th, 1886, x. 102.

ANON. [not signed].

Linc. N.

Louth Naturalists' Society [report on mollusca; the list now amounts to 58 species; *Anodonta cygnea*, *Paludina contecta*, *Bythinia leachii*, *Planorbis corneus*, *Arion subfuscus*, *Cyclostoma*, and *Carychium* noted; estuarine shells noted are *Melampus myosotis*, *Hydrobia ulva*, *Littorina littorea*, *L. rudis* vars. *tenebrosa* and *similis* found in the salt-marsh at Saltfleet]. Nat. World, Aug. 1886, iii. 158.

ANON. [not signed].

York S.W.

Ackworth Reports.—Natural History Society [*Acme* at Went Vale; *Vertigo minutissima* at Smeaton Crags; *V. antivertigo* and *Carychium* in grass fields; *Pisidium roseum* at Hessle; and enormous specimens of an *Anodonta* in Stapleton Park]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 128.

ANON. [Editorial].

Cheshire, Isle of Man.

Bulimus acutus; a query [as to whether it occurs in Lancashire, Westmorland, or Cumberland; and noting that it is on record for Cheshire and Isle of Man]. Nat., Dec. 1884, p. 112.

JOE BATES.

Lanc. S.

Planorbis dilatatus at Burnley [identified by Thomas Rogers]. Nat. World, May 1887, iv. 83.

J. BATES.

Lanc. S.

Additional Note on *Planorbis dilatatus* and *P. glaber* at Burnley [discovered June 1886 amongst *Valvata piscinalis*, and afterwards found in another place near Burnley]. Journ. of Conch., July 1887, v. 221.

T. W. BELL.

York S.E.

[*Helix rufescens* and vars. *albida* and *rubens*, *H. nemoralis* and *H. aspersa* from Driffeld]. Journ. of Conch., Jan. 1885, iv. 260.

[T. W. BELL.]

York Mid W., Linc. S.

[Yorkshire and Lincolnshire Mollusca: *Helix rotundata* v. *alba*, *Pupa umbilicata* and *Helix rupestris* from Crina Bottom, Ingleton, H. Shaw; *Clausilia dubia*, *Pupa secale* and *Zua* from White Scar, Ingleborough, H. Shaw; and *Limnæa stagnalis*, *L. peregra*, *L. palustris*, *Planorbis corneus*, *P. marginatus*, *P. albus*, *P. vortex*, *Paludina contecta*, and *Bythinia tentaculata* from Crowland Wash]. Journ. of Conch., Jan. 1887, v. 134.

Naturalist,

W. D. BRAITHWAITE, Secretary.

York S.W.

Ackworth School Natural History Society [with notes of *Limnæa glabra*—erroneously recorded as *Planorbis glaber*—in great quantity in a small pond near Primrose Vale, and of *Limnæa stagnalis* of normal shape at Winterset, Oct. 17th]. Nat. Hist. Journ., Nov. 15th, 1886, x. 169, and Erratum, Dec. 15th, 1886, x. 188.

W. D. BRAITHWAITE, Secretary.

York S.W.

Ackworth Natural History Society [*Limnæa auricularia*, *L. palustris* and *Paludina conlecta* at Askern, May 26th, 1887]. Nat. Hist. Journ., June 15th, 1887, xi. 106.

[J. DARKER BUTTERELL.]

York S.E.

The Yorkshire Naturalists' Union at Pocklington [June 24th, 1885; *Arion ater*, *A. hortensis*, *Limax agrestis*, *L. lævis*, *L. maximus*, *L. flavus*, *Anodonta cygnea*, *Pisidium pusillum*, *Planorbis albus*, *Pl. complanatus*, *Limnæa peregra*, *L. truncatula*, *Zonites nitidulus*, *Z. alliarius*, *Helix aspersa*, *H. nemoralis*, *H. hortensis*, *H. cantiana*, *H. hispida*, *H. rotundata*, *Bulimus obscurus*, *Clausilia rugosa*, *C. laminata*, *Zua*, and *Carychium*, noted]. Nat., Aug. 1885, p. 308.

S. C. COCKERELL.

Lanc. W., Furness.

Mollusca of Coniston and Carnforth, Lancashire [April 6th et seq., 1887; three species of *Limax*, two of *Arion*, *Vitrina*, eight of *Zonites*, *Helix aspersa*, *H. nemoralis*, *H. aculeata*, *H. ericetorum*, *H. rufescens*, *H. pulchella*, *H. rotundata*, *H. rupestris*, *H. hispida*, *Bulimus obscurus*, *Zua*, *Pupa umbilicata*, *Vertigo edentula*, *Clausilia rugosa* and vars., *Valvata piscinalis*, *Physa fontinalis*, *Ancylus fluviatilis*, and *Limnæa peregra* v. *lacustris* noted]. Nat., June 1887, p. 190.

T. D. A. COCKERELL.

Lanc. S., Cheshire.

A September Walk through Lancashire, Cheshire, and Staffordshire [made from Sep. 9th to 12th, 1885; the route was from Liverpool by Prescott, Rainhill, Warrington, Knutsford, Chelford, and Congleton to Leek, etc.; numerous species noted, with interesting remarks]. Nat., Feb. 1886, pp. 55-59.

T. D. A. COCKERELL.

York N.E.

Marine Shells at Whitby [criticising the nomenclature of W. C. Hey's record of *Trochus cinereus*; editorial explanation appended]. Nat., March 1886, p. 178.

T. D. A. COCKERELL.

Northumberland.

Arion subfuscus [Northumberland (Sutton)]. Sci. Goss., May 1886, p. 114.

T. D. A. COCKERELL.

Linc. N.

Chameleonic Arions [a variety of *A. hortensis* with orange slime at Louth]. Sci. Goss., June 1886, p. 140.

T. D. A. COCKERELL.

Durham.

Mollusca from Seaton Carew, Co. Durham [collected by Rev. J. W. Pattison; the marine shells mentioned are species and varieties of *Pecten*, *Macra*, *Cardium*, *Tellina*, *Solen*, *Lucinopsis*, *Mya*, *Saxicava*, *Tapes*, *Lutraria*, *Venus*, *Capulus*, *Emarginula*, *Patella*, *Helcion*, *Littorina*, *Lacuna*, *Trochus*, *Hydrobia*, *Natica*, *Buccinum*, *Purpura*, *Nassa*, and *Melampus*—35 forms in all; the land and fresh-water ones are *Bythinia tentaculata*, *Planorbis spirorbis*, *Limnæa peregra* (2 vars.), *Helix nemoralis* and *H. aspersa*]. Nat., June 1886, p. 163.

T. D. A. COCKERELL.

York N.W.

Shells in Coverdale and near Markington, N.W. Yorkshire [collected by R. C. Chaytor; *Vitrina*, six species of *Zonites*, *Helix arbustorum* and vars., *H. concinna*, *H. rupestris*, *H. rufescens* and v. *rubens*, *H. hortensis* v. *lutea*, *H. rotundata*, *Pupa umbilicata*, *Balea*, *Clausilia rugosa*, *Cl. laminata*, *Bulimus obscurus*, *Zua* and var. *ovata*, *Azeca*, *Carychium*, *Limnæa truncatula*, *Anodonta anatina*, *Sphærium corneum*, *S. lacustre*, *Pisidium pulchellum*, *Bythinia tentaculata*, *Physa hypnorum*, *Ancylus fluviatilis*, and *Succinea putris*]. Nat., June 1886, p. 163.

Aug. 1888

- T. D. A. COCKERELL. Lanc. S.
Some varieties of British Shells [including *Arion ater* var. *atra* Dum. & Mort., Lancashire, near Warrington]. Nat. World, Sep. 1886, iii. 179.
- T. D. A. COCKERELL. York Mid W., York N.E.
Slug Variation [with mention of *Limax cinereo-niger* var. *luctuosa* found at Shipley Glen and of *Arion bourguignati* at Middlesbrough]. Sci. Goss., Jan. 1887, p. 16.
- T. D. A. COCKERELL. York S.W., Linc. N.
Helix virgata [var. nov. *subdeleta*, from Pontefract (G. Roberts); and *H. caperata* var. *lutescens* Pasc., from near Louth (H. W. Kew)]. Nat. World, Jan. 1887, iv. 19.
- T. D. A. COCKERELL. Cheshire, York S.W.
Helix ericetorum [var. *monozona* Pascal, near Chester (Tomlin); *Arion hortensis* v. *nigra* Moq., Wakefield, as new to Britain, also noted]. Nat., Feb. 1887, p. 38.
- T. D. A. COCKERELL. Yorkshire.
On Melanism [based in part upon Yorkshire records of *Limax agrestis* var. *nigra*]. Ent., March 1887, xx. 58-59.
- T. D. A. COCKERELL. York S.E., York N.E.
Variation in Helices [G. Roberts has found trochiform *H. nemoralis* and *H. arbustorum* living together near Wressle; and Rev. W. C. Hey has found reversed *H. virgata* at Coatham within a few yards of the spot where he had previously taken reversed *H. aspersa*]. Sci. Goss., March 1887, p. 67.
- T. D. A. COCKERELL. Durham, Linc. N., Cheshire,
York S.W., York N.E.
Practical Naturalists' Society.—Conchological Recorder's Report for 1886 [the rare *Scalaria trevelyana*, Seaton Carew (Rev. J. W. Pattison); *Limnæa peregra* vars. *lacustris* and *intermedia*, *L. auricularia* var. *acuta*, and *Anodonta anatina* var. *rostrata*, all from Louth (H. W. Kew); *H. nemoralis*, Beeston, Cheshire (H. Friend), and var. *albolabiata*, Kiveton Park (H. Friend); *Arion subfuscus*, Wakefield; *Succinea vitrea*, Wressle; *Arion bourguignati*, Wakefield and Lofthouse]. Nat. World, March 1887, iv. 43-44.
- T. D. A. COCKERELL. York S.E.
Notes on Some Species of Inland Mollusca [with woodcut of *Succinea vitrea* Jeff. from Wressle, Yorks.]. Ann. & Mag. Nat. Hist., March 1887, Fifth Series, xix. 175.
- T. D. A. COCKERELL. York S.W.
The Variation and Abnormal Development of the Mollusca [referring to Kiveton Park specimens of *Helix nemoralis*]. Sci. Goss., Aug. 1887, p. 178.
- [E. COLLIER.] Lanc. S.
***Planorbis dilatatus* from Canal at Reddish**, and *P. spirorbis*, curiously distorted, from a ditch at Rusholme, Manchester]. Journ. of Conch., July 1887, v. 202.
- EDWARD COLLIER. Lancashire (absence).
Bulimus acutus . . . [absent from Lancashire]. Nat., March 1885, p. 181.
- [W. E. COLLINGE.] York Mid W.
***Limnæa palustris* from Clapham Common**, and *Clausilia dubia* from Ingleborough, exhibited to Conch. Soc., July 1st, 1886]. Journ. of Conch., Jan. 1887, v. 133.
- [W. E. COLLINGE.] York Mid W.
***Arion ater* var. *brunnea* found between Ripon and Kirby Malzeard**. Journ. of Conch., Jan. 1887, v. 134.

W. E. COLLINGE.

York Mid W.

Additions to the 'Mollusca of Clapham' [*Helix concinna*, *Pisidium pusillum*, *Planorbis vortex*, *Physa hypnorum*, *Limnæa glabra* and *L. truncatula*, for all of which localities are given]. Journ. of Conch., July 1887, v. 195.

[W. E. COLLINGE.]

York Mid W. or S.W.

[**Small *Limnæa palustris*** from Bingley]. Journ. of Conch., July 1887, v. 204.

JOHN CORDEAUX.

York S.E.

The Spurn [the kitchen middens of Kilnsea contain *Helix nemoralis*—'no doubt used as food'; *H. nemoralis* and *H. ericetorum* abundant on the sandhills]. Nat., Aug. 1884, pp. 1-8.

W. SHEWELL CORDER.

Lanc. W., Furness.

The Lancaster Sands [refers to the Cockles and the method of their collection for the market; also to ancient ballad anent the cocklers, and to their superstitions]. Nat. Hist. Journ., Dec. 15th, 1886, pp. 182-186.

R. D. DARBISHIRE.

Northumberland.

Astarte borealis [from the beach at Warkworth, one valve, epidermis very fresh]. Journ. of Conch., Jan. 1885, iv. 270; copied in Sci. Goss., May 1885, p. 115.

R. D. DARBISHIRE.

York S.W.

Achatina acicula at Knottingley [found in accordance with John Emmet's suggestions]. Nat., Sep. 1885, p. 320.

B. STURGES DODD.

Linc. N.

Paper on the Discovery of a new Marine Shell [*Terebratula papillosa* Marshall] found at Skegness and Sutton-on-Sea [figured]. Trans. and 34th Rep. of Nottingham Nat. Soc. for 1886 [pub. 1887], p. 76 and litho-plate.

[B. STURGES DODD.]

York S.W.

Yorkshire and Nottinghamshire Naturalists at Anston Stones [April 30th, 1885; *Achatina*, *Vertigo minutissima*, three *Sphæria*, *Pisidium amnicum*, *P. fontinale*, both *Anodonta*, *Neritina*, *Bythinia tentaculata*, *Valvata piscinalis*, *Planorbis albus*, *P. vortex*, *P. carinatus*, *Physa fontinalis*, *Limnæa peregrina*, *L. stagnalis*, *Ancylus fluviatilis*, *Arion ater*, *A. hortensis*, *Limax agrestis*, *Vitrina*, *Zonites cellarius*, *Z. nitidulus*, *Z. crystallinus*, *Z. purus*, *Helix aculeata*, *H. nemoralis*, *H. hortensis*, *H. concinna*, *H. hispida*, *H. pulchella*, *H. rotundata*, *Pupa umbilicata*, *Clausilia rugosa*, and *Zua*]. Nat., June 1885, p. 260.

J. DONALD.

Cumberland.

Notes on the Land and Fresh-water Shells of Cumberland [*Planorbis vortex* and *Pl. spirorbis*, *Pl. carinatus*, *Pl. contortus*, *Clausilia dubia*, and *C. laminata*; the number of Cumbrian species remains at 78, *Pl. carinatus* as an addition balancing *Pl. vortex*, struck out as misnomer]. Trans. Cumb. and Westm. Ass., No. xi. (1885-86, pub. 1886), pp. 150-151.

ED[ITOR]S., NAT. HIST. JOURNAL.

Nottinghamshire, York S.W.

Ackworth Reports [of fine *Limnæa glabra* in brick-ponds near Nostell, an *Anodonta cygnea* 7½ inches long in Clumber Lake, and var. *rostrata* found in Walton Hall Lake]. Nat. Hist. Journ., Nov. 15th, 1886, x. 167.

JOHN EMMET.

York Mid W.

Achatina acicula (the Needle Agate Shell) and its occurrence and distribution over the Magnesian Limestone of Yorkshire. Nat., July 1885, pp. 270-274.

JOHN EMMET.

York Mid W.

The Yorkshire Naturalists' Union at Blubberhouses [Sep. 26th, 1885; only three species found, *Arion hortensis*, *Limax agrestis*, *Zonites cellarius*; reference made by W. Denison Roebuck to the addition of *Limax levis*, *L. cinereo-niger*, *L. maximus*, *Limnæa auricularia*, *L. truncatula*, *Pisidium pusillum*, and *Zua* bringing up the total recorded fauna for the Dale to 20—a meagre total, but a most unfavourable district]. Nat., Nov. 1885, p. 380.

Aug. 1888.

[JOHN EMMET].

York S.W.

The Yorkshire Naturalists' Union at Askern [20th May, 1886; species noted were *Sphærium corneum*, *Bythinia tentaculata*, *Planorbis complanatus*, *P. carinatus*, *P. albus*, *Limnæa ovata*, *L. auricularia*, *L. truncatula*, *Valvata piscinalis*, *Unio tumidus*, *Anodonta cygnea*, *L. stagnalis*, *Pl. corneus*, three *Arions*, *Limax maximus*, *L. levis*, *L. agrestis*, two *Succineæ*, *Vitrina*, *Zonites cellarius*, *Z. nitidulus*, *Z. crystallinus*, *Helix aspersa*, *H. nemoralis*, *H. cantiana*, *H. hispida*, *H. rotundata* and var. *alba*, *Bulinus obscurus*, *Pupa umbilicata*, *Clausilia rugosa*, *Zua*, and *Carychium*]. Nat., June 1886, pp. 189-190.

[JOHN EMMET.]

York Mid W.

The Yorkshire Naturalists' Union in Upper Nidderdale [July 1886; *Azeca* and *Zonites radiatulus* added to the Upper Nidderdale list; *Z. crystallinus*, *Z. cellarius*, *Z. nitidulus*, *Clausilia rugosa*, *Helix hispida*, *H. rotundata*, *Arion ater*, and *Limax agrestis* (with v. *nigra*) also noted]. Nat., Aug. 1886, pp. 253-254.

W. W. FOWLER.

Linc. N., Linc. S.

Helix arbustorum v. cincta and Limnæa glabra near Lincoln [city; but in North and South Lincolnshire respectively]. Nat., May 1886, p. 149.

[F. G. FRYER].

York N.E.

[Helix cantiana on the way from York to Nova Scotia Wood]. Nat. Hist. Journ., June 15th, 1886, x. 102.

W. GAIN.

Nottinghamshire.

Unio pictorum at Ossington, Nottinghamshire [in abundance and of large size as were also *Anodonta cygnea*; measurements given]. Nat., Aug. 1884, p. 20.

W. GAIN.

Linc. N.

Marine Shells at Mablethorpe [*Solen*, *Mya*, and *Pholas* plentiful; an odd valve of *Pholas dactylus* measured $4\frac{3}{8}$ inches]. Nat., Sep. 1884, p. 31.

W. GAIN.

Nottinghamshire.

Unio pictorum at Ossington, Nottinghamshire [of large size; dimensions given]. Nat., Dec. 1884, p. 112.

W. GAIN.

Nottinghamshire.

Amalia gagates [var. plumbea] in Nottinghamshire [tolerably abundant in writer's garden at Tuxford, 36 miles from nearest coast]. Nat., Sep. 1885, p. 321.

W. A. GAIN.

Nottinghamshire, York S.W.

Paludina contexta in Nottinghamshire and Yorkshire [near Bawtry; and *Balea perversa* found at the junction of three Notts. parishes—Darlton, East Markham, and East Drayton]. Journ. of Conch., July 1886, v. 80; and Nat., July 1886, p. 213.

CARLETON GREENE.

York S.E.

A List of Marine Shells obtained at Filey in August and September 1887 [giving first a list of 27 shells found on the beach, then a list of 12 brought by fishermen from the Dogger Bank, and a notice of a fine *Crepidula* procured from a fisherman, and stated to have come from the neighbourhood in the course of trawling]. Journ. of Conch., Oct. 1887, v. 233-235.

J. A. HARGREAVES.

York Mid W. or S.W.

Scalariform Planorbis spirorbis near Bingley [22nd Jan. 1887]. Nat., March 1887, p. 86.

W. HY. HEATHCOTE.

Lanc. W.

Lancashire Notes [made at Morecambe and Heysham, Sep. 7th, 1886; *Helix aspersa* and var. *minor*, *H. rufescens*, *H. caperata* and vars. *ornata* and *gigaxii*, *H. nemoralis*, *H. hortensis*, *H. hispida*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Vitrina*, *Cochlicopa lubrica* and var. *hyalina*, *Helix rupestris*, *H. pulchella* and var. *costata*, *H. rotundata*, and *Pupa umbilicata*, among land shells; and *Littorina littorea*, *Mytilus edulis*, *Cardium edule* and var. *rustica*, *Tellina*, *Macra stultorum*, *Solen siliqua*, and *Buccinum undatum*]. Nat. World, Feb. 1887, iv. 38.

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The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells,
 etc., is John Eggleston, Park Place, Sunderland. Lists free.

Every Naturalist should read the 'Historical Counts' of Oswald Dawson's
 Indictment of Darwin. 4d., of Greevz Fisher, Koburg Terrace, Leeds.
 Chapter ii, 'Religious Counts.'

- W. HY. HEATHCOTE. Lanc. S.
Lancashire Notes [made at Tarleton, etc., near Preston; 27 aquatic mollusca mentioned as taken]. Nat. World, March 1887, iv. 57-58.
- W. H. HEATHCOTE. Lanc. S.
Physa fontinalis var. albina at Farington, South Lancashire [two found March 4th, 1887]. Journ. of Conch., April 1887, v. 185.
- [W. H. HEATHCOTE.] Lanc. S., Lanc. W.
[Bythinia tentaculata, curiously and extensively eroded, from Tarleton, S. Lancashire, *Helix hispida* and var. *albida* from Penworthan; *Cochlicopa lubrica* var. *hyalina* from Morecambe, W. Lancashire]. Journ. of Conch., July 1887, v. 205.
- [W. H. HEATHCOTE.] Lanc. W.
[*Unio margaritifer* from the Lune at Halton]. Journ. of Conch., Oct. 1887, v. 248.
- [W. A. HERDMAN.] Cheshire.
[Address on the Work of the Liverpool Marine Biology Committee : referring to a nudibranch—*Dendronotus arborescens*—which is particularly abundant at Hilbre Island at certain times of the year, and almost absent at others]. Proc. Manch. Lit. and Phil. Soc., Dec. 7th, 1885, xxv. 103.
- [W. A. HERDMAN.] Cheshire.
Liverpool Microscopical Society [*Goniodoris castanea*, three species of *Ascidium*, from Hilbre Island, and other species, referred to]. Sci. Goss., Jan. 1886, p. 17.
- W. C. HEY. York N.E., York S.E.
The Marine Shells of Yorkshire [the list, which is prefaced by introductory remarks, includes 115 species]. Nat., Sep. 1884 and Jan. 1885, pp. 25-31 and 129-133.
- [W. C. HEY.] York N.E.
The Yorkshire Naturalists' Union at Helmsley [4th Aug., 1884; *Limnæa peregra*, *Helix sericea*, *H. fusca*, *H. lapicida*, *H. rupestris*, and *Clausilia laminata* noted]. Nat., Sep. 1884, p. 42.
- [W. C. HEY.] York S.E.
The Yorkshire Naturalists' Union at Spurn Point [3rd Sep., 1884; *Helix aspersa*, *H. nemoralis*, *H. virgata* (not observed), *H. caperata* and v. *ornata*, *Pupa marginata*, *Vitrina*, *Zua*, *Vertigo edentula*, *Hydrobia ulva*, *Littorina littorea*, *Chiton marginatus*, *Tellina solidula*, *Purpura lapillus*, *Buccinum undatum*, and *Trophon truncatus* noted]. Nat., Nov. 1884, p. 92.
- W. C. HEY. York Mid W.
Conchological Notes from Settle [April 28th; *Helix rupestris*, *Clausilia rugosa*, *H. arbustorum* and var. *flavescens*, *Zonites nitidulus*, *Z. radiatulus*, *H. hispida*, *H. concinna*, *Z. alliarius* and v. *viridula*, *Vitrina*, *Zua*, *H. nemoralis*, *Pupa umbilicata*, *Z. crystallinus*, *Pupa secale*, *H. ericetorum*, *H. rufescens*, *Z. cellarius*, *Ancylus fluviatilis*, *Limnæa peregra*, *Bulinus obscurus*, and *Clausilia dubia*]. Nat., June 1885, p. 258.
- W. C. HEY.] York Mid W.
The Yorkshire Naturalists' Union at Boroughbridge [May 25th, 1885; *Limnæa glabra*, *Planorbis spirorbis*, both *Physa*, both *Ancylus*, *Pl. albus*, *Pl. contortus*, *Bythinia tentaculata*, *Anodonta cygnea*, *L. truncatula*, *Arion ater*, *A. hortensis*, *Limax agrestis*, *L. lævis*, *Succinea putris*, *Zonites crystallinus*, *Z. cellarius*, *Z. nitidulus*, *Helix aspersa*, *H. hortensis*, *H. cantiana*, *H. rufescens*, *H. hispida*, *H. concinna*, *H. rotundata*, *Clausilia rugosa*, *Zua*, *Sphærium corneum*, *Pisidium pusillum*, *P. fontinale*, *Pl. corneus*, *Pl. complanatus*, *Pl. carinatus*, *Limnæa peregra*, *L. palustris*, *L. stagnalis*, *L. auricularia*]. Nat., July 1885, p. 280.

[W. C. HEY.]

York N.E.

The Yorkshire Naturalists' Union at Whitby [August 3rd: *Pisidium pusillum*, *Unio margaritifera*, *Planorbis nautilus*, *Limnæa peregra*, *L. truncatula*, *Ancylus fluviatilis*, *Arion ater*, *Limax agrestis*, *L. maximus*, *Succinea putris*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Helix aspersa*, *H. nemoralis*, *H. hispida*, *H. concinna*, *H. rotundata*, *Zua*, and of marine shells *Littorina saxatilis*, *L. littorea*, *L. littoralis*, *Chiton marginatus*, *Trochus cinereus*, *Modiola modiolus*, *Anomia ehippium*, and *Patella vulgata*]. Nat., Oct. 1885, p. 348-349.

[W. C. HEY.]

York S.E.

The Yorkshire Naturalists' Union at Flamborough Head [14th June, 1886; *Sphærium lacustre*, three *Pisidia*, *Limnæa peregra*, *L. palustris*, *L. truncatula*, *Planorbis nautilus*, *P. complanatus*, *Physa fontinalis*, three *Arions*, three *Limaces*, *Succinea putris*, four *Zonites*, *Helix aspersa* and var. *exalbida*, *H. nemoralis* and var. *albolabiata*, *H. cantiana*, *H. rufescens*, *H. hispida* and var. *subrufa*, *H. virgata*, *H. caperata*, *Clausilia rugosa*, *Zua*, and *Carychium* noted]. Nat., July 1886, pp. 216-217.

WM. C. HEY.

York N.E.

Reversed Specimen of *Helix virgata* at Coatham [within a few yards of the spot where the writer had some years before found a reversed *H. aspersa*; coincidence of station noted as suggestive]. Nat., Jan. 1887, p. 20.

W. C. HEY.

York N.E.

The River Foss [and its molluscan inhabitants; *Sphærium* (all four), both *Anodonta*, *Unio pictorum*, *U. tumidus*, *Paludina vivipara*, *Limnæa auricularia*, *L. palustris*, *L. stagnalis*, both *Bythinia*, both *Valvata*, *Physa fontinalis*, *Planorbis carinatus*, *P. complanatus*, *P. corneus*, *Ancylus fluviatilis*, *Neritina*, and the *Succineæ*]. Nat. World, Feb. 1887, iv. 22-23.

[W. C. HEY.]

York N.E.

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [July 1887; *Planorbis albus*, *Pl. nautilus*, *Physa fontinalis*, *Pisidium pusillum*, *Limnæa glabra*, *L. peregra*, *Sphærium corneum*, *Helix lapicida*, *H. rotundata*, *H. arbustorum*, *H. hortensis*, *H. hispida*, *H. rufescens*, *Zonites alliarius*, *tupa umbilicata*, *Clausilia rugosa*, *Pisidium fontinale*, and *Limax agrestis* observed; *Helix aspersa* is also noted as found by W. Cash, but this is an error; the fact being that W. Cash threw away a specimen he happened to have in his pocket, and this was picked up by someone else]. Nat., Aug. 1887, p. 237.

W. C. HEY.

York S.E.

Notes on Land and Fresh-water Shells near Bridlington [*Anodonta cygnea*, *Planorbis corneus*, *Limnæa stagnalis* in Boynton Fish-pond; *Helix virgata* and *H. caperata* at Auburn, and var. *ornata* at Bridlington; *Pupa marginata* near Bampton; *Planorbis vortex* and *Valvata piscinalis* at Driffeld; *H. arbustorum* at Speeton Cliffs; earthy marls at the back of Bridlington Harbour contain four *Limnææ*, three *Planorbis*, *Succinea putris*, *Bythinia tentaculata*, *Sphærium corneum* and *Pisidium pusillum*; the blue marls contained the two last-named with *Valvata piscinalis* and *Zua*; an excavation in pre-glacial clay at Sewerby yielded *Pupa marginata*, *Helix pulchella*, and *H. hispida* sub-fossil; singularly, the same three occurred together at Bampton alive]. Nat., Dec. 1887, p. 374.

[RICHARD HOWSE.]

Northumberland S.

[*Limax arborum* from Akeld; *L. lævis*, *Arion bourguignati*, *Zonites radiatulus*, *Z. purus*, and *Z. crystallinus* from West Woodburn, Northumberland]. Journ. of Conch., Oct. 1887, v. 249.

BAKER HUDSON.

Durham.

Land and Fresh-water Shells collected in County Durham, 1883 and 1884 [45 species (besides varieties) mentioned, with localities]. Nat., Dec. 1884, p. 112.

BAKER HUDSON.

York N.E.

[A very peculiar example of *Limax maximus* from Airy Holme Wood, N.E. Yorkshire]. Journ. of Conch., Jan. 1885, iv. 261.

Naturalist,

- C. H. PIERSON. York Mid W.
***Clausilia rugosa* var. *gracilior* at Clapham**, Yorkshire [found Aug. 1884, not far from the Church]. *Journ. of Conch.*, April and July 1887, v. 183 and 205.
- [C. H. PIERSON.] York Mid W.
[Shells at Addingham, April 11th, 1887; *Zonites cellarius*, *Z. nitidulus*, *Z. purus* and v. *margaritacea*, *Z. glaber*, *Azeca tridens* and var. *crystallina*, and *Zua*]. *Journ. of Conch.*, July 1887, v. 207.
- [C. H. PIERSON.] York Mid W., York S.W.
[*Unio tumidus* and *Anodonta cygnea* from mud-heaps on the banks of the Canal at Kirkstall; and *A. cygnea* and var. *rostrata* from Roundhay, near Leeds]. *Journ. of Conch.*, July 1887, v. 209.
- H. POLLARD. York N.E.
Land and Fresh-water Shells in the neighbourhood of Whitby [a full and detailed list, with localities and introductory remarks, of five slugs, twenty-six land and ten fresh-water shells (altogether forty-one species) found in the valley of the Yorkshire Esk, which is on the whole an unfavourable district]. *Nat.*, May 1887, pp. 134-138.
- T. MELLARD READE. Lanc. S.
Notes on a Bed of Fresh-water Shells and a chipped flint lately found at the Alt Mouth. [The shells, consisting of '*Lymneus lymnea*', '*L. periger*', *Cyclas cornea*, and *Planorbis spirorbis*, were crowded in a bed of mixed peat, sand, and mud; immediately under the sand-hills, close to this bed, a small flint flake was found.] *Proc. Liverpool Geol. Soc.*, Part 2 of vol. v. (1886), pp. 137-139.
- HUGH RICHARDSON. York Mid W.
Mollusca of the Neighbourhood of Clapham, Yorkshire [found by J. R. B. Tomlin, M. C. Hughes, and the writer; the list includes 41 species and one or two varieties]. *Journ. of Conch.*, April 1886, v. 60-61.
- HUGH RICHARDSON. York N.E., York S.W., York Mid W.
Hints to Shell-Collectors [with notes on *Achatina* in Ouse rubbish at Clifton Ings, York, *Vertigo minutissima* near Ackworth, *Azeca* and *Pupa umbilicata* found at York, *Clausilia dubia* at Ackworth, *Physa hypnorum* at Bishophthorpe, *Unio*, *Anodon*, *Neritina*, *Paludina*, and all four species of *Sphaerium* at York, and *Helix lapicida* near Ackworth]. *Nat. Hist. Journ.*, June 15th, 1886, x. 89-93.
- HUGH RICHARDSON. York S.W.
The Shells of Ackworth and Went Vale [The first part is devoted to explanation, nomenclature, verification of records, and varieties, and a copious résumé of authorities, not only bibliographical, but with indications of contributors of hitherto unpublished notes]. *Nat. Hist. Journ.*, Feb. 15th, 1887, xi. 1-4. [The second instalment defines the district, and describes the various localities within and closely adjoining, with notice under each of what is there found]. *Nat. Hist. Journ.*, March 15th, 1887, xi. 27-30 (with map of district). [The list of species includes 83 species and 16 more within square brackets as found immediately outside the district]. *Nat. Hist. Journ.*, April 15th, 1887, xi. 50-53; May 16th, xi. 76-77; June 15th, xi. 101-104; Sep. 15th, xi. 122-125; Oct. 15th, xi. 147-153; Nov. 15th, xi. 176-179; Dec. 15th, xi. 200-203.
- GEO. ROBERTS. York S.W.
***Achatina acicula* and its occurrence near Wakefield** [at Newton, and in the town, on Carboniferous Sandstone]. *Nat.*, Sep. 1885, p. 321.
- G. ROBERTS. York Mid W.
Conchological Difficulties [in continuation of discussion on naming variations: reference made to difference in colour of *Helix rufescens*, due to environment, in Craven and other parts of Yorkshire, etc.]. *Zool.*, Jan. 1886, pp. 31-32.

- GEORGE ROBERTS. York S.W.
Garden Slugs [at Lofthouse, near Wakefield, are *Arion ater*, *A. hortensis*; and at Wakefield, *Limax agrestis* var. *nigra*]. Sci. Goss., May and June 1886, pp. 118 and 140.
- GEO. ROBERTS. Lanc. S.
Lancashire Helices [referring to published notes and lists, as Cockerell's, Standen's, and Dyson's, mentioning species, and urging publication of detailed and further information]. Nat., June 1886, p. 163.
- GEORGE ROBERTS. York S.W.
***Arion subfuscus* and *Helix hispida* var. *fusca* in Yorkshire** [at Lofthouse, near Wakefield, June 2nd, 1886]. Zool., Aug. 1886, x. 341.
- GEORGE ROBERTS. York S.E.
Mollusca of Wressle and neighbourhood [being a full and detailed list—with localities—of twenty-one fresh-water mollusca, two slugs, and fifteen land mollusca, besides numerous named varieties]. Nat., Oct. 1886, pp. 311-314.
- GEO. ROBERTS. York S.W.
***Planorbis complanatus* var. *submarginata* in Yorkshire** [at Sharleston near Pontefract]. Nat., Nov. 1886, p. 347.
- GEO. ROBERTS. York S.E.
Addition to Wressle List of Mollusca [of *Sphaerium cornéum* var. *regularis* Pasc.]. Nat., Nov. 1886, p. 347.
- GEORGE ROBERTS. York S.W.
Supplementary Notes on the Mollusca of Pontefract and Neighbourhood [in which *Sphaerium*, *Pisidium*, *Planorbis*, *Bythinia*, *Physa*, *Limnaea*, *Arion*, *Limax*, *Succinea*, *Helix*, *Clausilia*, and *Achatina* are treated of, the notes chiefly dealing with Varieties not included in the author's former papers]. Zool., Nov. 1886, x. 448-453.
- GEORGE ROBERTS. York Mid W., York S.W., Lanc. S.
Notes on Varieties of *Bythinia tentaculata* [with descriptions of monst. *scalariforme*, Milford near Pontefract, var. *major* Loc., Fairburn and Bradford, var. nov. *angulata*, canal near Bradford, var. ?*producta* Menke, Fairburn, var. *zonata* Baud., near Bradford, var. *fulva* Loc., Apperley near Bradford, and monst. *decollatum* Jeff., Kirkthorpe near Wakefield, near Bradford, and at Prestwich]. Nat., Jan. 1887, pp. 19-20.
- GEORGE ROBERTS. York Mid W., York S.W.
Arion flavus [at Harrogate and at Wakefield]. Sci. Goss., Nov. 1887, p. 260.
 [These were doubtless juvenile specimens of one of the other *Arions*, *Arion flavus* being merely a name, a myth.—W.D.R.]
- GEORGE ROBERTS. York N.E.
***Planorbis Nautilus* var.** [from Scarborough, the smooth form]. Sci. Goss., Nov. 1887, p. 260.
- WM. DENISON ROEBUCK. Durham.
Slugs in County Durham [collected by Baker Hudson at Durham; *Limax arborum*, *L. maximus* var. *cellaria*, *L. agrestis* and vars. *sylvatica*, *albida*, and *tristis*, *Arion ater* vars. *rufa* and *marginata*, and *A. hortensis*; and *Limax arborum* from Middleton-in-Teesdale]. Nat., Aug. 1884, p. 20.
- [W. DENISON ROEBUCK.] York N.W.
The Yorkshire Naturalists' Union at Hawes [28th June, 1884; *Limax laevis*, *L. arborum*, *Succinea putris*, *Zonites fulvus*, *Helix sericea*, *Clausilia laminata*, *C. dubia*, *Azeca*, and *Anodonta anatina* mentioned, with localities]. Nat., Aug. 1884, p. 18.
- W. D. ROEBUCK. York Mid W.
[*Limax maximus*, type, Headingley, Leeds]. Journ. of Conch., Jan. 1885, iv. 260.

BAKER HUDSON.

York N.E.

Notes on the Land and Fresh-water Mollusca of the Lower Tees

[Yorkshire; 24 species mentioned, with localities, as additional to Ashford's, Hey's, and Watson's lists; and a note as to the successful introduction of *Limnæa stagnalis* and *Planorbis corneus* in a pond on Redcar sand-hills].
Journ. of Conch., April 1886, v. 46-48.

[BAKER HUDSON.]

York N.E.

The Yorkshire Naturalists' Union at Pickering [Aug. 1886; *Pisidium pusillum*, *Planorbis spirorbis* and monst. *scalare*, *Limnæa ovata*, *L. palustris*, *L. glabra*, *Ancylus fluviatilis*, three species of *Arion*, five of *Limax* (including *L. cinereo-niger*), *Succinea putris*, seven of *Zonites*, *Helix aspersa*, *H. nemoralis*, *H. arbustorum*, *H. concinna*, *H. hispida*, *H. virgata*, *H. caperata*, *H. rotundata*, *Bulimus obscurus*, *Pupa umbilicata*, *Clausilia rugosa*, *Cl. laminata*, and *Zua* noted]. Nat., Sep. 1886, pp. 273-274.

BAKER HUDSON.

York N.E.

The Conchological Stigma removed from Yorkshire [by the discovery—by T. A. Lofthouse—of *Amalia gagates* at Middlesbrough, in company with *A. marginata*]. Nat., Oct. 1886, p. 314.

[B. HUDSON.]

Durham, York N.E.

[Mollusca from N. E. Yorkshire and co. Durham; *Limnæa ovata*, River Leven near Hutton Rudby; *Pisidium fontinale*, Linthorpe; *Planorbis spirorbis*, *Pisidium pusillum*, and *Limnæa palustris*, pond near Levisham; *Ancylus fluviatilis* and *Helix rotundata*, Levisham; *H. aspersa*, Sunderland; *H. concinna*, *H. rotundata*, *H. hispida*, *Zonites cellarius*, *Zua*, *Clausilia rugosa* and *Cl. laminata* from Farwath Bridge, Newtondale; *H. virgata* var. *subalbida*, Coatham; *Limnæa ovata*, Marton; and *Planorbis spirorbis* monst. *scalare* from Levisham]. Journ. of Conch., Jan. 1887, v. 136 and 137.

[BAKER HUDSON.]

York N.E.

The Yorkshire Naturalists' Union at Saltburn [30th May, 1887; *Limnæa peregra*, all the four species of *Arion*, three of *Limax*, six of *Zonites*, *Helix nemoralis*, *H. hispida*, *H. caperata*, *Zua*, *H. rotundata*, *H. aculeata*, *Clausilia rugosa*, *Cl. laminata*, *Vertigo edentula*, *Carychium*, *Vitrina*, *Succinea putris*, *Helix arbustorum*, *H. sericea*, *H. hortensis* var. *lutea*, *H. concinna*, *Azeca*, and *Pupa umbilicata* were observed; and information as to the range in Cleveland of *H. hortensis* is given]. Nat., July 1887, pp. 218-219.

BAKER HUDSON.

Durham.

Description of a New Variety [albida] of *Planorbis carinatus* Müll. [taken in the mill-race, Bluestone Mill, near Norton, co. Durham, April 18th, 1885; where also were *Limnæa peregra* (pale), and *Bythinia tentaculata* vars. *excavata* and *albida*]. Journ. of Conch., Oct. 1887, v. 249.

[BAKER HUDSON.]

York N.W.

Yorkshire and Westmorland Naturalists at Sedbergh [*Zonites fulvus*, *Azeca*, *Helix rupestris*, *Vertigo pygmaea* mentioned]. Nat., Sep. 1887, p. 279.

[HENRY] HYDE.

Cheshire.

[*Cyclas rivicola* from the Marple Canal]. Proc. Manch. Lit. and Phil. Soc., Sep. 20th, 1886, xxvii. 6.

J. M. JEFFCOTT.

Isle of Man.

[One of] 'The Seven Sleepers,' according to Manx Tradition [was the *crammag*, or snail: etym. *cramman*=lump or bulb]. Nat., Aug. 1884, p. 14.

H. WALLIS KEW.

Linc. N.

Another Post-glacial Ravine [Hubbard's Valley near Louth] and its inhabitants [with mention of *Limax arborum*, *Arion hortensis* var. *grisea*, *Limax agrestis* and var. *sylvatica*, *Helix ericetorum* and var. *aff. alba*, *H. rufescens*, and *H. caperata* and var. *ornata*]. Nat. World, March 1886, iii. 42-43.

H. WALLIS KEW.

Linc. N.

Mollusca at Louth, North Lincolnshire [notes on thirty-one species and their varieties, the results of a few months' work]. Nat., March 1886, p. 79.

Sept. 1888.

H. WALLIS KEW.

Linc. N.

Shells of the Ponds and Streams [near Louth ; *Anodonta cygnea*, *Ancylus fluviatilis*, *Planorbis vortex*, *Sphaerium corneum*, *Limnæa palustris*, *L. ovata*, *L. stagnalis*, *Planorbis corneus*, *Bythinia tentaculata*, *Valvata piscinalis*, *Planorbis spirorbis*, *Pl. carinatus*, *Pl. contortus*, and *Physa fontinalis*]. Nat. World, April 1886, iii. 61-62.

H. WALLIS KEW.

Linc. N.

Old Chalk-pits [near Louth ; *Helix ericetorum*, *Arion ater*, *A. hortensis*, *H. nemoralis* and varieties (of which $O_23(45)$ is said to be characteristic of Louth), *Limax agrestis*, *H. rufescens*, *H. rotundata*, and *H. hispida* mentioned]. Nat. World, May 1886, iii. 81-82.

H. WALLIS KEW.

Linc. N.

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, 3rd April, 1886 ; *Helix aspersa*, *H. nemoralis*, *H. caperata*, *H. hispida*, *H. pulchella*, *Pupa umbilicata* var. *alba*, *P. marginata*, *Zua* and var. *minor* noted, with remarks on the variation of *H. nemoralis* ; marine shells on the beach were species and varieties of *Pholas*, *Mya*, *Solen*, *Macra*, *Tellina*, *Scrobicularia*, *Cardium*, *Mytilus*, *Pecten*, *Ostrea*, *Patella*, *Trochus*, *Hydrobia*, and *Buccinum*—15 forms ; and high-water rejectamenta produced *Sphaerium corneum*, *Bythinia tentaculata*, *Valvata piscinalis*, six *Planorbis*, *Physa fontinalis*, and *Limnæa ovata*]. Nat., June 1886, pp. 171-173.

H. WALLIS KEW.

Linc. N.

The Greasy-field and Grisel-bottom [near Louth ; *Limnæa peregra* var. *ovata*, and *Balia perversa* mentioned]. Nat. World, June 1886, iii. 101-103.

H. WALLIS KEW.

Linc. N.

Woodland Rambles in Lincolnshire [in Maltby and Haugham Woods near Louth, April 1886 ; numerous species of mollusca mentioned]. Young Nat., July 1886, vii. 129-131.

H. WALLIS KEW.

Linc. N.

Estuarine Shells at Saltfleet, Lincolnshire [16th June, 1886 ; *Melampus myosotis*, *Hydrobia ulvæ*, *Littorina littorea*, *L. rudis* and two varieties]. Nat., Aug. 1886, p. 251.

H. WALLIS KEW.

Linc. N.

On the Lincolnshire Wolds [at Donington-on-Bain ; *Arion ater*, *Zonites glaber*, *Z. fulvus*, *Cochlicopa lubrica*, *Helix ericetorum*, *H. caperata*, *Limnæa truncatula*, *Arion hortensis*, *Limax agrestis*, *H. nemoralis* (vars.), *H. hispida*, *L. peregra* v. *ovata*, and *Zonites crystallinus* noted]. Nat. World, Aug. 1886, iii. 141-143.

H. WALLIS KEW.

Linc. N.

Evenings in Spring [near Louth ; *Helix nemoralis* (varieties), *H. aspersa*, *H. hispida*, *H. rufescens*, *H. ericetorum*, *Limax arborum*, *L. agrestis* and var. *sylvatica*, *L. maximus* vars. *fasciata* and *cellaria*, and *L. flavus* noted]. Nat. World, Sep. 1886, iii. 161-162.

H. WALLIS KEW.

Linc. N.

[Hydrobia ulvæ mentioned as abounding in the salt-marshes at Saltfleet]. Sci. Goss., Sep. 1886, p. 208.

H. WALLIS KEW.

Linc. N.

Cyclostoma elegans re-discovered in [Martin Lister's] North Lincolnshire [locality, Burwell Wood, for which it was first recorded in 1678]. Nat., Nov. 1886, p. 347.

H. WALLIS KEW.

Linc. N.

Estuarine Shells at Tetney, Lincolnshire [12th July, 1886 ; *Cardium edule*, *Mya arenaria*, *Littorina rudis*, *L. littorea* and var. *paupercula*, and *Hydrobia ulvæ* found ; *Melampus myosotis* searched for, but unsuccessfully]. Nat., Nov. 1886, p. 347.

Naturalist,

- H. WALLIS KEW. Linc. N.
Notes from the Green-sand [*Anodonta cygnea* and *Limnæa auricularia* noted at Benniworth Haven; and *Helix arbustorum*, *H. nemoralis*, *H. ericetorum*, *H. caperata*, *H. concinna*, *Zonites glaber*, *Z. fulvus*, *Z. radiatulus*, and *Zua lubrica* at Donington-on-Bain]. Nat. World, Nov. 1886, iii. 201-202.
- H. WALLIS KEW. Linc. N.
Natural History Odds and Ends [scarcity of *Helix hortensis* near Louth; occurrence of *H. virgata* in raisins, *H. cespitum* in nuts, and *Trochus zizyphinus* in 'Irish Moss,' in Louth shops]. Nat. World, Dec. 1886, p. 222.
- H. WALLIS KEW. Linc. N.
Natural History Rambles. No. 1. In the Woods [near Louth; Martin Lister's records for *Cyclostoma elegans* and *Zonites fulvus* quoted, and the capture of *Bythinia tentaculata*, *Cyclostoma*, *Arion ater* var. *rufa*, and *Limax maximus* var. *fasciata* noted]. Sci. Goss., Feb. 1887, p. 31.
- H. WALLIS KEW. Linc. N.
Zonites fulvus [and *Cyclostoma elegans*] re-discovered in its ancient locality in Lincolnshire [at Burwell Wood, for which it was recorded in 1678 by Martin Lister]. Journ. of Conch., July 1887, v. 199.
- B. B. L[E].T[ALL, Secretary]. York N.E.
York, Bootham. Natural History Club [albino *Arion ater* at York, *Limnæa glabra* near Bootham Stray. *Sphærium ovale* in the Foss, noted]. Nat. Hist. Journ., Nov. 15th, 1886, x. 172.
- [J. MADISON.] York S.W.
[Vertigo minutissima from Sheffield (no doubt Kiveton Park)]. Midl. Nat., June 1886, ix. 171.
- [J. MADISON.] York Mid W.
[Limnæa stagnalis var. fragilis-variegata from Malham Tarn]. Midl. Nat., Aug. 1886, ix. 227.
- J. T. MARSHALL. Linc. N.
On some New British Shells [*Terebratula papillosa* described and figured as new; found at Skegness and at Sutton-on-Sea, Lincolnshire]. Journ. of Conch., April 1887, v. 186-190, and plate i. figs. 1-3.
- [LAURA and KATHERINE MASON.] Linc. N.
[Vertigo pygmæa and Helix caperata, Chapel Sand-hills, Lincolnshire]. Journ. of Conch., Oct. 1887, v. 248.
- J. G. MILNE. Cheshire.
Varieties [decollata] of *Bythinia tentaculata*, [vitrina of] *Zonites excavatus*, and [hyalina of] *Cochlicopa lubrica* in N.E. Cheshire [localities stated]. Nat., March 1886, p. 78.
- J. G. MILNE. Cheshire.
Scarcity of Helices in N.E. Cheshire [*H. rotundata* is the only generally distributed one; *H. nemoralis*, *H. aspersa*, *H. aculeata*, *H. hispida*, *H. pulchella*, and *H. pygmæa* are all scarce, stations given; the species of *Zonites* on the contrary, are common everywhere]. Nat., March 1886, p. 80.
- J. G. MILNE. Cheshire.
Mollusca near Ashley, Cheshire [*Vertigo pygmæa*, *Vitrina*, *Succinea elegans*, eight species of *Zonites*, *Helix aculeata*, *H. hispida*, *H. rotundata*, *Zua* with its var. *hyalina*, *Carychium*, *Limnæa peregra*, *L. truncatula*, two species of *Arion* and three of *Limax* are enumerated]. Nat., Aug. 1887, p. 228.
- J. MOORE. Isle of Man.
Arion ater v. albolateralis [found at Kirk Braddan and Onchan, and one of v. *albida* at Onchan]. Sci. Goss., April 1886, p. 94.
- C. T. MUSSON. Nottinghamshire.
Large Anodons in Nottinghamshire [at Sutton-in-Ashfield; *A. cygnea*, dimensions given]. Nat., Dec. 1884, p. 112.

- C. T. MUSSON. Nottinghamshire.
Mussels [*Anodonta cygnea*, *Unio tumidus*, *U. pictorum*, and *Dreissena*] eaten by animals and birds [Nottinghamshire evidence adduced in proof]. *Nat.*, March 1885, p. 181.
- C. T. MUSSON. Nottinghamshire.
Discovery of *Helix cantiana* in Nottinghamshire [not previously recorded, plentifully found at Staunton in S.E. Nottinghamshire]. *Journ. of Conch.*, July 1886, v. 65; and *Nat.*, Aug. 1886, p. 251.
- WM. NELSON. York S.E.
***Paludina contecta* in East Yorkshire** [between Brighton and Wressle; previous records recapitulated]. *Nat.*, Aug. 1884, p. 20.
- WM. NELSON. York Mid W., York S.W.
***Zonites radiatulus* var. *viridescenti-alba* in West Yorkshire** [at Huddersfield (Whitwham), Shipley Glen (W. West), and Crossgates, Leeds]. *Nat.*, Aug. 1884, p. 20.
- W. NELSON. Cumberland.
[*Limnæa peregra* v. *acuminata* from Carlisle, and *L. glabra* from Corby]. *Journ. of Conch.*, Jan. 1885, iv. 265.
- [W. NELSON.] York Mid W.
[*Limnæa glabra* from Castleford and *Planorbis marginatus* from Black Hills, Leeds]. *Journ. of Conch.*, Jan. 1887, v. 136.
- [W. NELSON.] York S.E.
[Subfossil *Planorbis parvus* from Hornsea mud-cliffs, exhibited]. *Journ. of Conch.*, Jan. 1887, v. 138.
- [W. NELSON.] York Mid W.
[*Zonites nitidus* and *Helix rotundata* from Headingley, Leeds, exhibited]. *Journ. of Conch.*, Jan. 1887, v. 139.
- [W. NELSON.] York Mid W.
[*Limnæa glabra* at Swillington Common, near Leeds]. *Journ. of Conch.*, July 1887, v. 206.
- [W. NELSON.] York Mid W., York S.W.
[Large *Planorbis albus* from near Harrogate (F. R. Fitzgerald), measuring 9 mm., and var. *draparnaldi* from Sandal, 9 mm.]. *Journ. of Conch.*, Oct. 1887, v. 247.
- CHARLES OLDHAM. Cheshire.
Fresh-water Shells near Manchester [in a pond at Baguley, Cheshire, *Paludina contecta*, *Bythinia tentaculata*, *Planorbis corneus*, *Anodonta cygnea*, *Limnæa auricularia*, *L. peregra*, *L. ovata*, and *Planorbis carinatus*]. *Nat.*, Feb. 1885, p. 156.
- CHARLES OLDHAM. Lanc. S.
Fresh-water Shells eaten by Rats [at Birch near Manchester, the shells eaten being *Paludina contecta* and *Planorbis corneus*]. *Nat.*, July 1885, p. 274.
- CHAS. OLDHAM. Derbyshire.
***Helix arbustorum* monst. *sinistrorsum* in Derbyshire** [at Ashwood Dale near Buxton, Aug. 1st, 1887; this is the first recorded British example]. *Nat.*, Sep. 1887, p. 272.
- CHARLES OLDHAM. Cheshire, Derbyshire.
[*Helix arbustorum*, with vars. *alpestris* and *flavescens* and monst. *sinistrorsum*, from Buxton; and type from Marple, Cheshire]. *Journ. of Conch.*, Oct. 1887, v. 247.
- EDGAR PICKARD. York S.W.
Mollusca at Anston Stones [*Pupa umbilicata*, *Clausilia rugosa*, *Zua lubrica* and var. *viridula*, *Zonites glaber*, *Z. nitidulus*, *Z. purus*, *H. hispida*, *H. rotundata*, *Planorbis albus*, *Vertigo antivertigo*, *V. minutissima*, and *H. aculeata*]. *Nat.*, May 1885, p. 227.

JNO. W. TAYLOR.

York S.W.

Occurrence of *Vertigo alpestris* Alder in Yorkshire [at Cottingley near Bingley, discovered by H. T. Soppitt, and found associated with *Helix rufescens*, *Zonites crystallinus*, *Vitrina*, and *Clausilia rugosa*]. Journ. of Conch., Oct. 1887, v. 238.

[J. R.] BROCKTON TOMLIN.

Cheshire.

L.[imnæa] peregra m. decollatum and *Bythinia tentaculata* m. decollatum in Cheshire [locality stated and remarks made]. Nat., March 1886, p. 79.

[J. R.] BROCKTON TOMLIN.

Furness, Lanc. S.

Monstrosities of various Lancashire Shells [*terebrum* of *Planorbis complanatus*, Rochdale, *sinistrorsum* and another monstrosity of *Helix aspersa* from Ulverstone]. Nat., Jan. 1887, p. 20.

[J. R.] BROCKTON TOMLIN.

Cheshire.

Variation in *Helix ericetorum* near Chester [a var. corresponding to *subalbida* of *H. virgata*; monst. *scalariforme* also occurred, and with the species occurred *H. caperata* and two of its varieties; all on the banks of the Dee]. Nat., Jan. 1887, p. 20.

J. RUSSELL WILDMAN.

Lanc. S.

Lancashire Notes.—Conchology [; a list of 26 fresh-water mollusca found in the Leeds and Liverpool Canal at Burnley; also of 15 terrestrial shells found on the margin]. Nat. World, April 1887, iv. 79.

J. RUSSELL WILDMAN.

Lanc. S.

Lancashire Notes.—Conchology [list of 20 species of *Vitrina*, *Zonites*, *Helix*, *Bulimus*, *Ancylus*, *Limnæa*, *Sphærium*, and *Carychium*, taken at Simonstone and Whalley, besides varieties]. Nat. World, May 1887, iv. 100; and Erratum, June 1887, iv. 116.

J. W. WILLIAMS.

Linc. N.

The Variation and Continental Distribution of the British Slugs [*Arion ater* var. *bicolor* mentioned as having been found at Louth]. Sci. Goss., March 1886, p. 55.

J. W. WILLIAMS.

York S.W.

Slugs and their Varieties [refers to *Arion subfuscus* and *A. bourguignati* at Lofthouse near Wakefield]. Young Nat., Oct. 1887, viii. 190.

J. W. WILLIAMS.

Durham.

Slug Gossip [in which the Allansford record of *Limax tenellus* is repeated]. Sci. Goss., Nov. 1887, p. 244.

NOTES—MAMMALIA.

Whale at Flamborough.—I have had a report of another Whale having been seen by one of our fishermen not far from the place where the other one was washed ashore. The fisherman informs me that this Whale is white or cream-coloured, and much larger, with the dorsal fin in the same place as the other. When seen, it was swimming about in a very wild sort of manner, perhaps in search of the one washed ashore.—MATTHEW BAILEY, Flamborough, April 3rd, 1888.

Lincolnshire Bats.—Mr. J. W. Chandler, of Gosberton near Spalding, has sent me a couple of Bats taken in Gosberton Church. They are the Long-eared Bat (*Plecotus auritus*) and the Pipistrelle (*Vesperugo pipistrellus*), and are small, evidently young, specimens.—W. DENISON ROEBUCK, Leeds, August 21st, 1888.

Water Shrew and Field Vole near Ripon.—I have received to-day from the Rev. R. A. Summerfield, vicar of North Stainley, near Ripon, a specimen of the Water Shrew (*Crossopus fodiens*) and one of the Common or Field Vole (*Arvicola agrestis*), both out of a hay-field at North Stainley. The Vole is a fine adult male, the largest example of the species that I have ever seen. The specimens are now in the Edinburgh Museum. I record them because micro-mammals are not very often examined in the flesh, and definite records of them are of interest.—W. DENISON ROEBUCK, Leeds, 9th August, 1888.

Sept. 1888.

UTILITY OF THE BARN OWL.

J. H. GURNEY, JUN., F.Z.S., M.B.O.U.,
Keswick Hall, Norwich.

IN the autumn of 1865 a Barn Owl (*Strix flammea*) was brought to a naturalist at Tonbridge, Kent, to be stuffed, which belonged to a gentleman at Leigh near Tonbridge, whose wife stated that she had picked up the owl, dead, on their barn floor, and that beside it lay a very large rat, also dead. There is little doubt, adds my informant, that an encounter had taken place between them, the injuries received by each being sufficient to cause death, for the Owl had been severely bitten by the rat.

This is only one more instance of the utility of the Barn Owl, which does not obtain the protection which by law it is entitled to. It would have been much better if only the Barn Owl had been included in the schedule of Protected Birds, and not all Owls, as it is impossible to restrain gamekeepers—at any rate in Norfolk—from killing the Tawny and Long-eared Owls, and the law as it stands becomes a dead letter as far as Owls are concerned, and thus the Barn Owl—the most useful ally the farmer has—is rapidly becoming a very rare bird in the eastern counties. A still greater anomaly in the Act is that any sort of legal protection should be afforded to the farmers' enemies, the Sparrow and Ring Dove, which do far more harm than good, and are quite undeserving of it; yet only persons expressly appointed by owners and occupiers are legally entitled to kill them in the close-time [43 and 44 Vict., c. 35, 7th Sep., 1880].

NOTE—ORNITHOLOGY.

Unusual Nesting-site for Missel Thrush.—One of my boys found a nest of the Missel Thrush (*Turdus viscivorus*) in a wall which formed part of the boundary of a pasture bordering upon Barden Moor. If I had not had autoptical proof of this record I should have surmised either that the nest was not in situ, or, what would have appeared more probable, a nest of the Ring Ouzel. Whether this departure from its usual habit had been induced with a view to its greater safety I am unable to say, but when passing through an adjoining plantation we were struck with the many remains of birds which had undoubtedly fallen victims to birds of prey.

We noted the Pied Flycatcher (*Muscicapa luctuosa*) nesting in Barden Tower.—E. P. P. BUTTERFIELD, Wilsden, May 28th, 1888.

In the 'Fell' district of Upper Wensleydale, I, my son, and others, used frequently to find the Missel Thrush nesting in stone walls, or in fissures of vertical crags on the open moor-slopes. We assigned the fact to super-abundance of the bird relatively to tree supply; still, though far from proven, one cannot fail to be struck by the theory Mr. Butterfield adumbrates—that 'inherited memory' (to use Romanes' word) of disaster following on the practice of a time-honoured custom, has led the older and wiser birds to a protective variation in habit. The eggs of the crag-breeding birds were, I am sure, larger and finer in character; the eggs of the plantations (used presumably by the younger generations) less boldly marked and smaller. The matter is well worth patient investigation.—F. A. LEES.

Naturalist,

LIST OF PLANTS NOTICED AT FYLINGDALES (ROBIN HOOD'S BAY) IN SEPTEMBER 1882.

C. C. BABINGTON, M.A., F.R.S.,

*Professor of Botany in the University of Cambridge; and Author of the
'Manual of British Plants.'*

My district included the edge of the high moorland all round the bay, as well as the low country of the bay. I have put a * to those which are included in Mr. Slater's list given on p. 239. This list may be worth printing as an appendix to that list. It will be seen that nearly all the earlier plants are wanting in this list. If they could not be easily determined at that late season I did not mark them: many things were omitted of which I was dubious at the time. I did not mark any brambles, but believe that I have a few specimens.

Ranunculus flammula.
*Ranunculus acris.
*Ranunculus repens.
Papaver rhœas.
Meconopsis cambrica, doubtful native.
Fumaria pallidiflora.
*Sinapis arvensis.
Sinapis alba.
Sinapis nigra.
Nasturtium officinale.
*Capsella bursa-pastoris.
Viola riviniana.
*Polygala vulgaris.
*Saponaria officinalis, native.
*Lychnis diurna.
Stellaria media.
*Stellaria holostea.
*Stellaria graminea.
Stellaria uliginosa.
Sagina procumbens.
Hypericum tetrapterum.
Hypericum humifusum.
Hypericum pulchrum.
Malva sylvestris.
Geranium rotundifolium.
Ilex aquifolium.

Acer campestre.
*Medicago lupulina.
*Trifolium arvense.
*Trifolium repens.
Trifolium minus.
*Lotus corniculatus.
Lotus major.
Vicia cracca.
Prunus spinosa.
Potentilla fragariastrum.
*Potentilla reptans.
Potentilla anserina.
Fragaria vesca.
Geum urbanum.
Rosa mollis.
Pyrus torminalis.
Pyrus aucuparia.
*Epilobium hirsutum.
*Epilobium parviflorum.
Epilobium montanum.
Epilobium obscurum.
Callitriche vernalis.
Parnassia palustris.
Hydrocotyle vulgaris.
Ægopodium podagraria.
Æthusa cynapium.
Angelica sylvestris.

- **Heracleum sphondylium*.
Daucus carota.
Hedera helix.
 **Galium cruciatum*.
Galium verum.
Galium saxatile.
Galium palustre.
 **Galium aparine*.
Scabiosa arvensis.
Carduus crispus.
 **Carduus lanceolatus*.
Arctium minus.
Centaurea nigra.
Chrysanthemum leucanthemum.
Matricaria inodora.
Achillea millefolium.
Gnaphalium uliginosum.
Senecio vulgaris.
Senecio sylvaticus.
Senecio jacobæa.
Senecio aquaticus.
Solidago virga-aurea.
 **Tussilago farfara*.
 **Eupatorium cannabinum*.
Leontodon autumnalis.
Taraxacum officinale.
Lactuca muralis.
Sonchus oleraceus.
Sonchus asper.
 **Hieracium pilosella*.
Hieracium boreale.
Campanula rotundifolia.
 **Vaccinium myrtillus*.
Erythræa centaurium.
Convolvulus arvensis.
 **Scrophularia nodosa*.
Veronica agrestis.
Veronica buxbaumii.
Veronica serpyllifolia.
Veronica officinalis.
 **Veronica chamædrys*.
 **Veronica beccabunga*.
Pedicularis sylvatica.
Rhinanthus crista-galli.
Calamintha menthæfolia, *i.e.*
officinalis.
 **Brunella vulgaris*.
 **Stachys sylvatica*.
Galeopsis tetrahit.
Lamium purpureum.
Myosotis repens.
Myosotis arvensis.
Pinguicula vulgaris.
Lysimachia vulgaris.
 **Lysimachia nemorum*.
Anagallis arvensis.
Anagallis tenella.
Plantago lanceolata.
Chenopodium bonus-henricus.
Atriplex angustifolia.
Atriplex erecta.
Rumex conglomeratus.
Rumex pulcher.
Rumex obtusifolius.
Rumex crispus.
Rumex acetosa.
Polygonum convolvulus.
Polygonum aviculare.
Polygonum hydropiper.
Polygonum persicaria.
Euphorbia peplus.
Mercurialis perennis.
Urtica dioica.
Quercus robur.
Corylus avellana.
Alnus glutinosa.
Salix cinerea.
Salix caprea.
Arum maculatum.
Potamogeton polygonifolius.
Tamus communis.
Juncus conglomeratus.
Juncus effusus.
Juncus glaucus.
Juncus acutiflorus.

- W. D. ROEBUCK. York Mid W., York N.W.
[*Helix lactea*, living, from Pateley Bridge; and Swaledale captures, six species]. Journ. of Conch., Jan. 1885, iv. 261.
- W. DENISON ROEBUCK. York Mid W.
Occurrence of *Limax cinereo-niger* in Washburndale [July 5th, 1885, with *L. agrestis*, *L. laevis*, *L. maximus* var. *cellaria*, *Arion ater* var. *rufa*, and *Zonites fulvus*]. Nat., Sep. 1885, p. 320.
- W. DENISON ROEBUCK. Linc. N.
***Amalia gagates* [and var. *plumbea*] in North Lincolnshire** [in gardens at Alford]. Nat., Nov. 1885, p. 366.
- W. DENISON ROEBUCK. Cheshire.
***Testacella haliotidea* v. *scutulum* at Chester** [in the green lanes near nursery gardens, but not in them (G. W. Shrubsole)]. Nat., March 1886, p. 80.
- W. DENISON ROEBUCK. York Mid W.
Upper Nidderdale and its Fauna . . . Mollusca [a full list of forty species (besides varieties), only one of which (*Limnaea peregra*) is not a land shell; localities cited for all]. Nat., July 1886, pp. 206-208.
- WM. DENISON ROEBUCK. York Mid W.
***Limax cinereo-niger* at Shipley Glen** [the var. *maura* found by J. A. Hargreaves, Sep. 30th, 1886; same locality where W. West found the var. *luctuosa* some years ago]. Nat., Nov. 1886, p. 347.
- W. DENISON ROEBUCK. York Mid W.
[*Limax cinereo-niger* collected by J. A. Hargreaves at Shipley Glen, exhibited]. Journ. of Conch., Jan. 1887, v. 138.
- W. DENISON ROEBUCK. Linc. N., Linc. S.
Materials towards a List of the Land and Fresh-water Mollusca of Lincolnshire [being a full and detailed enumeration of eighty-eight species (eleven slugs, thirty-nine land and thirty-eight fresh-water shells) known to inhabit the county, preceded by a description of the investigated districts and by a full historical summary of the investigations made]. Nat., Aug. and Sep., 1887, pp. 245-272.
- THOMAS ROGERS. Lanc. S.
On *Planorbis dilatatus*, *P. glaber*, and *Sphaerium ovale* [their introduction into canals near Manchester and at Burnley, and the conditions under which they flourish]. Journ. of Conch., July 1887, v. 218-220.
- GEORGE W. SHRUBSOLE. Cheshire.
On the Erosion of Certain Fresh-water Shells [clean Staffordshire specimens of *Planorbis corneus* from the Trent Canal at Stone, became very much eroded in water from the Dee at Chester; attributed to the different proportion of lime in the respective waters]. Journ. of Conch., July 1886, v. 66-71; and see review in Americ. Nat., 1886, p. 1065.
- P. L. SIMMONDS. Isle of Man, Furness, Lanc. W.
The Animal Food Resources of Different Nations, with mention of some of the Special Dainties of Various People derived from the Animal Kingdom [at p. 425 it is stated that there are large beds of Scallops (*Pecten*, ? species) off the Isle of Man; and at p. 432 are given statistics of sales of Mussels (*Mytilus edulis*) taken in Morecambe Bay]. London: E. and F. N. Spon, . . . 1885; 8vo. cloth, 461 pages.
- R. STANDEN. Lanc. W., Lanc. S.
Lancashire Helices [being detailed notes on the occurrence of *H. nemoralis*, *H. hortensis*, *H. caperata*, *H. ericetorum*, *H. virgata*, *H. aspersa*, *H. rufescens*, *H. rotundata*, *H. arbustorum*, and *H. hispida*, in various localities round Preston, at Manchester, Blackpool, and Formby]. Nat., March 1886, p. 80.

- R. STANDEN. Lanc. S., Lanc. W.
Lancashire Land and Fresh-water Mollusca [a detailed enumeration of the forty-one fresh-water and thirty-nine land shells and seven slugs recorded for Lancashire, based upon Dyson's 1850 and Hardy's 1865 lists, and upon the observations of the author and of W. H. Heathcote, F. C. Long, R. D. Darbishire, T. Rogers, and others; at p. 176 are noted intentional introductions of species into fresh localities]. Nat., May and June 1887, pp. 155-176.
- JOHN W. TAYLOR. Northumberland S.
Shells at Riding Mill on Tyne [*Pisidium amnicum*, *Limnæa ovata*, *Ancylus fluviatilis*, *Vitrina*, *Zonites cellarius*, *Helix rotundata*, *Bulimus obscurus*, *Clausilia laminata*, *C. rugosa*, and *Zua lubrica* var. *lubricoides*, collected by Rev. H. H. Slater]. Nat., Jan. 1885, p. 139.
- J. W. TAYLOR. York N.E.
Pupa marginata var. **brevis** (Baudon) in **Yorkshire** [at Runswick Bay, near Whitby, 27th June, 1885]. Nat., March 1886, p. 79.
- J. W. TAYLOR. Cumberland.
Shells at Millom, Cumberland [Sep. 1882, collected by C. T. Musson; *Helix rufescens*, *H. aspersa*, *H. rotundata*, *H. rupestris*, *Pupa umbilicata*, *Clausilia rugosa*, *Balia* and var. *simplex*, *Zonites cellarius*, *Z. fulvus*, and *Z. radiatulus*]. Nat., March 1886, p. 78.
- J. W. TAYLOR. Nottinghamshire.
Vertigo moulinsiana in **Nottinghamshire** [with *V. pygmæa* and *V. pusilla* in rejectamenta at Carlton-on-Trent, April 1883, C. T. Musson]. Journ. of Conch., April 1886, v. 45.
- J. W. TAYLOR. Nottinghamshire.
Extension of the range of Pupa ringens Jeff. [to Nottinghamshire; found at Kirkby-in-Ashfield by C. T. Musson]. Journ. of Conch., July 1886, v. 81.
- JNO. W. TAYLOR. York Mid W.
Helix lactea [at Pateley Bridge] in **Yorkshire** [Aug. 1884, probably brought with shingle from the coast]. Journ. of Conch., July 1886, v. 81; and Nat., Aug. 1886, p. 251.
- [J. W. TAYLOR.] Lanc. S., York S.E.
Planorbis dilatatus from **Gorton Canal**, Coll. T. Rogers; and *Helix nemoralis* with straw-coloured bands, found at Bridlington by W. Denison Roebuck]. Journ. of Conch., Jan. 1887, v. 134.
- [J. W. TAYLOR.] Lanc. S.
[Distorted specimen of Planorbis spirorbis found at Tarleton, S. Lancashire, by W. H. Heathcote, exhibited]. Journ. of Conch., Jan. 1887, v. 140.
- [J. W. TAYLOR.] York S.W.
[Helix rotundata, Zonites excavatus, and Z. alliarius at Bramley Fall, near Leeds]. Journ. of Conch., July 1887, v. 209.
- JNO. W. TAYLOR. Linc. N.
Discovery of Clausilia Rolphii in North Lincolnshire [in three distinct localities in old oak woods near Louth]. Journ. of Conch., July 1887, v. 220; also Oct. 1887, v. 245.
- JOHN W. TAYLOR. York S.W.
Pisidium roseum in Yorkshire [found near Bawtry by W. A. Gain; the only previous Yorkshire record is for Bentley near Doncaster]. Nat., Sep. 1887, p. 272.
- JNO. W. TAYLOR. Derbyshire.
Helix arbustorum monst. sinistrorsum in Derbyshire [at Ashwood Dale, near Buxton, Aug. 1st, 1887; of the var. *flavescens*]. Journ. of Conch., Oct. 1887, v. 225.

Juncus lamprocarpus.	Bromus giganteus.
Juncus bufonius.	Bromus asper.
Juncus squarrosus.	Brachypodium sylvaticum.
Phleum pratense.	Triticum repens.
Agrostis canina.	Nardus stricta.
Aira cæspitosa.	*Athyrium filix-fœmina.
Aira caryophyllea.	*Scolopendrium vulgare.
Triodia decumbens.	*Aspidium aculeatum.
Briza media.	Aspidium spinulosum.
*Cynosurus cristatus.	Aspidium dilatatum.
*Dactylis glomerata.	Polypodium vulgare.
Festuca ovina.	Equisetum arvense.
Festuca elatior.	*Equisetum maximum.

A NEW WEST YORKSHIRE PLANT (PYROLA ROTUNDIFOLIA).

F. ARNOLD LEES, M.R.C.S., Eng.; L.R.C.P., Lond.;

Author of the 'Flora of West Yorkshire'; President of the Botanical Section of the Yorkshire Naturalists' Union; etc.

By favour of Mr. Trevor Basil Woodd I am glad to be able to place on record an observation of that gentleman's, which makes a genuine addition to our list of West Riding plants. In my 'Flora' I considered it justifiable to express grave doubts whether true *Pyrola rotundifolia* L. occurred in W. York at all, seeing that every previous record made under that name had turned out, upon investigation of herbarium specimens or plants growing in the assigned stations, to be either *Pyrola media* or *P. minor*—species either confused with or classed under '*rotundifolia*' by early botanists. Now, however, Mr. Woodd has kindly sent me green flowering examples of a *Pyrola* which grows 'on the damp slopes of the wood at Outershaw (in Langstrothdale), sloping down to the Wharfe, 1,200 ft. above the sea.' This is a new station, *not* one of those previously recorded for either *P. media* or *P. minor*; and by its much decurved pink styles, with a raised ring at the tip bounding the base of the stigmatic cone, its small round leaves, and longish fine-pedicelled flowers, the petals of which open out more than in *P. minor*, the species is undoubtedly true *Pyrola rotundifolia*. The altitude at which it grows is fully 300 ft. greater than any known hitherto for the round-leaved section in Yorkshire, but in the highlands of Scotland, according to Hooker, Mr. Woodd's plant is found as high as 2,000 ft.

August 20th, 1888.

Sept. 1888.

NOTE—BOTANY.

Thalictrum alpinum L. at Settle.—As Mr. Lees, in trying to throw doubt on my record for *Thalictrum alpinum*, has fallen into some very amusing mistakes, I claim a little of your space while I correct them. In the first place, I have no 'impression' in regard to *T. alpinum*. I only possess a very clear, distinct, and somewhat extended knowledge of it. *I have seen it on the hills at the back of Settle.* As one who is, according to Mr. Lees, 'a comparative stranger,' I need no apology for being unable to indicate to him the exact square yard of ground on which he may find it; enough for him to learn that the hills in the Settle district are *not too dry* for this plant. Mr. Lees labours under a delusion when he imagines that *T. alpinum* is a bog plant; it is not so, but is found on wet or on dry ground. I have seen it in the crevices of the driest rocks on Ben Lawers, Ben Lui, Ben Ledi, and many other of our hills, as well as on the wet ledges. In the Shetland Islands I have seen it on very dry ground, as well as on still more dry gravel; indeed, I do not know any alpine plant which thrives under a greater range of conditions. Mr. Lees reminds me of the Irishman who, being accused of a crime, stated that he could bring fifty men to prove that they did not see him do it, and so he drags forward six names to prove that *they* did not see the plant in question. And now one word in regard to *Nephrodium æmulum*, a plant Mr. Lees seems as familiar with as with *T. alpinum*. Will Mr. Lees kindly inform your readers *where* Edward Newman states that he (Edward Newman) saw this plant (*N. æmulum*) in Settle Woods. In conclusion, I have seen *T. alpinum* on the hills near Settle, and I have no doubt that it will be found on Ingleborough and some of the other hills by those who know where to look for it. If, however, your botanists follow the advice of Mr. Lees and look for it in a bog, they will remain as familiar with it as he is at present.—A. CRAIG CHRISTIE, Edinburgh, August 12th, 1888.

NOTES—LEPIDOPTERA.

Deilephila galii at Bradford.—Mr. J. Holmes, a collector of lepidoptera here, brought me this morning a specimen of this rare hawk-moth for identification, which had been taken from a wall in Manningham Park on July 22nd last. Considering that the captor had carried it in his hat—which although it has often done good service as a botanical vasculum, is not so convenient a receptacle for insects—it is in very fair condition, being only slightly 'rubbed' on the thorax. Previously, only two specimens had been recorded for the Bradford district—one having been captured at Cleckheaton, the other in 1878 at Wibsey.—J. W. CARTER, Bradford, August 5th, 1888.

Deilephila galii at Harrogate.—On the 26th of July last I took a specimen (male, I think) of *Deilephila galii*, hovering over a plant of *Delphinium formosum* in a garden in Harrogate, about 9.15 p.m. The occurrence of this species is so rare in England that its capture in Yorkshire is worth recording.—BEN. BLAYDES THOMPSON, II, Franklin Parade, Harrogate, 13th August, 1888.

Deilephila galii at Alford, Lincolnshire.—A fine specimen of *Deilephila galii* was brought to-day to me to be named. It was taken here by Mr. T. P. Richardson on the evening of the 2nd instant, in his garden at a clump of 'Sweet William.'—ROBERT GARFIT, Alford, 16th August, 1888.

Deilephila galii at Hartlepool.—I had brought to me on the 24th July a specimen of *Deilephila galii*, which had been taken amongst some pit timber by a labourer upon the quay side. The specimen had evidently been in beautiful condition when first seen, but the man who discovered it unfortunately thought it was dead, and took hold of it by one of the wings, rubbing it somewhat; the other side is, however, quite undamaged. Mr. J. E. Robson also had a specimen brought to him about a week previously; this had been taken in a hotel yard.—J. GARDNER, 8, Friar Terrace, Hartlepool, August 19th, 1888.

NOTES ON THE LAPWING NEAR GARSTANG.

J. A. JACKSON,
Warrington.

(Read before the Warrington Field Club, February 3rd, 1888.)

THE following notes all refer to the district near Garstang, unless specially mentioned otherwise. The bird to which I wish to call attention is no doubt familiar to all—at least at a distance—and is known commonly as the Lapwing, or Tewit, and its scientific name is *Vanellus vulgaris*. It is a handsome bird when closely examined, being black on the head, crest and breast, white on the sides of the neck and lower parts, yellowish red under tail coverts, and dark green above, slightly mottled and shot with purple; tail white, with a black patch on all except the outer feather at each side. In winter the chin and throat are white, changing to black during the breeding season, beginning about April. Bill dark, legs reddish, the eye large and full. Length, $12\frac{1}{2}$ in.; width from tip to tip of wings, 28 in. Weight, 8 oz. to 9 oz. Plumage of male and female is similar, except that the latter is not quite so bright, and the crest shorter. The crest is a very conspicuous feature in this species, and in a fine specimen is some three inches long. This bird is widely distributed, being found in most parts of Europe, in Egypt, and East and West from Ireland to Japan. It breeds in all our English counties, but is least common in the Midland and South-Western. They are partially migratory, in some districts regularly so; and I find them mentioned several times in the migration reports from the lighthouses, and also in Mr. Gätke's notes from the Island of Heligoland. The young are led by the parent birds in search of food, but not fed by them. Their principal food is worms, slugs, and insects. On the shore they get sandhoppers, shrimps, and other small crustacea. They are good to eat in autumn and winter, and in some districts large numbers are netted for the market; but, so far as I know, this is never practised in this part of the country. In 'The Fowler in Ireland' there is a very interesting account of this bird; its eggs are not sought for there, or regarded as a dainty, as in England. A full description is given of the method to be pursued in netting it: 'From thirty to forty dozen birds per net per week would be an average take in January if the weather be mild (this being the best month). The dealers give from 4d. to 6d. each for the birds, and as many as 150 are sometimes taken at one fall of the net.'

Of course so common a bird has many provincial names (see 'Provincial names of British Birds,' by Rev. Chas. Swainson, M.A., English Dialect Society, 1885), a few of which it may be interesting to notice. First from its mode of flight, Lipwingle (in Bedfordshire), Lymptwigg (on Exmoor), Flopwing; second from its cry, Pee-wit (generally), Piewipe, Peewee (in Norfolk), Puit (Essex, Suffolk, Norfolk), Peaseweep (Stirling and Forfar), Weep or Wype, Tewhit and Teewheep (Kirkcudbright, Orkney), Teufit (Cleveland, East Yorkshire), Teuchit (Forfar), Tuet (Westmorland, Lancashire, West Riding), Dix-Huit (France); third from its plumage, Hornpie (Norfolk, East Suffolk), Horneywink (Cornwall), Green Plover (Ireland), Cornwillen (Cornwall). 'The Lapwing is almost universally held in bad esteem, as is shown by the various titles and legends in which it plays a part. In the South of Scotland the peasantry bear it a traditional antipathy, arising from the raids upon the Covenanters by Claverhouse and Dalrymple of Binns, whose troopers were directed to their hiding-places by its cries of alarm. Hence its name of "the ungrateful bird." Leyden alludes to this in the lines:—

And though the pitying sun withdraws his light,
The Lapwing's clamorous whoop attends their flight;
Pursues their steps where'er the wanderers go,
Till the shrill scream betray them to the foe.
Poor bird! where'er the wandering swain intrudes
On thy bleak heath and desert solitudes,
He curses still thy scream and clamorous tongue,
And crushes with his foot thy moulting young.

In Eastern story the Lapwing is mentioned as having the power of finding water under ground in the desert.' This is, no doubt, from its always resorting to a damp spot, if there be one, because of the food to be found there.

The first few days of 1887 the ground was so hard with frost that with the exception of three or four birds flying over, no Lapwings were to be seen. When flying in a flock no regular form is observed, such as many other birds assume under the same circumstances. If a flock is observed flying across a dark background of cloud, the silvery white of the feathers when the wings are raised has a very striking effect, especially if the sun happens to be shining. On the 22nd January, the weather having moderated, a small flock of Lapwings had returned to the pasture-fields, and were busy running about in company with some Starlings, as is often the case. On February 6th the ground was frozen hard, and in a wheat-field at Burtonwood about twenty of these birds were resting on the ground, not standing on their feet or running about, but apparently waiting for the ground to soften. February 26th—Plenty of birds running

Naturalist,

about the grass fields; saw some forty in one field, mostly about twenty yards apart, and busy sticking their bills into the ground. Also saw a few pairs which had to all appearance chosen their field to nest in, although there was no appearance of the wild flying up and down which they exhibit in the breeding season, nor any attempt at making nests. On March 19th Tewits were abundant, not more than two together, and spread about over all the localities where they usually nest, but no sign of nests yet, and the weather very cold, with east wind, whilst much snow still remains on the high ground. March 25th—Birds still in plenty, scattered over the fields, but no trace of nests. April 2nd—Tewits very noisy, seeming never to rest, shouting and flying about night and day. They were scattered over the fields, mostly in pairs, but saw one small flock of about seven; no nests to be seen as yet. April 8th—During a day's walk near Bakewell, in Derbyshire, we saw only three Tewits, but the ground was not specially suitable for them, and they are evidently not very numerous just there. April 11th—Tewits in great plenty, and when the night happens to be warm, they are very noisy. If the night is cold it seems to check their exuberance. Several nests are now made, but saw no eggs. The nest is a shallow depression in the ground, generally scratched out by the bird; in some cases lined with short straws, but in many nests no straws are to be seen. We may note here that very many nests are made which never seem to have eggs laid in them, and this seems especially to be the case in ploughed fields, where the nests are almost on the bare earth. April 22nd—Tewit's nest, with four eggs in, 'hard sat.' The birds are very plentiful, and apparently never rest at this season of the year, day or night; the noise of their wings as they rush close over you in the dark gives you the idea that each separate feather will be torn out of the wing by the strain on it. We heard several birds making the peculiar grating noise they produce when on the ground, and in many cases whilst scratching a hollow for a nest; the weather cold and nests not plentiful. In early spring the eggs run the danger of being frozen, and in this case the shell cracks and the egg is spoiled. Rooks may be often observed flying over the fields where the Lapwings are nesting, keeping close to the ground, and they are sure to be attacked by the Lapwings and driven away. No doubt the Rook likes Plovers' eggs raw as well as we do boiled. Lapwings have at least four distinct notes: (1st) The usual call of 'pee-wit,' from which so many of its local names are derived; (2nd) the exaggerated form of this which they give forth with such vigour whilst performing all sorts of gyrations in the air over their nesting places at the beginning of the breeding season; (3rd) the grating

noise already mentioned which cannot be heard at any great distance ; and (4th) the kind of contented short whistle which they indulge in when a number are feeding together. These birds seem to feed either by day or night, usually the latter if not very rough and dark ; and during the day they may be sometimes seen sitting quietly in the grass fields, all heads turned to the wind, and evidently resting. The Lapwing lays almost, if not invariably, *four* eggs ; they are large for the size of the bird, and it seems strange that the number should be so fixed unless it is that any more would be simply wasted from fitting badly into the nest, and not getting covered by the bird when sitting. Nests have been found with five eggs in (see 'Zoologist,' July 1887), but these cases are so very rare as to warrant the assumption that two birds have laid in one nest. The eggs are always placed in the nest with the small ends together, and fit admirably in this position. The eggs vary a little in size and colour, and in rare cases varieties are met with. The eggs are much sought after in this country as delicacies for the table, and large numbers are sent to market, in many cases fetching a higher price than ordinary hen's eggs. The white of the egg when boiled is not chalky white, like that of a hen, but a semi-transparent jelly. The nests are not usually very near together, although many may be in the same field, and seem to be placed on all kinds of ground, and are most sought for in ploughed and stubble fields. During the breeding season the birds are scattered all over, and nesting even on the tops of the highest fells, but the most favourite places are the rough pastures on high ground where the grass is coarse, the ground often damp, and in places growing rushes. These fields never fail to produce eggs if carefully searched, but no careless glance will be likely to detect the nest, even though it is open to your gaze, and the best plan to find them is systematically to quarter the ground section after section, or to drive your stick in as a mark and walk round it ; even this way a practised eye is required to detect them with certainty, and some persons seem to have a special 'knack' of finding them. It is not easy to detect the bird leaving its nest unless you come on one suddenly over a hill-top, in which case you can sometimes walk straight to the nest. Certain spots are sure to be selected as nesting sites year after year, not the very same inch of ground, perhaps, but somewhere near. In one field we know of, there is a shallow reedy tarn in the middle, and round this is a strip of land covered with rough grass, the field itself being ploughed. On this strip of grass there have been one or more nests for several years now, and this year we kept watch on a nest here, and the time of incubation seemed to be about twenty-one days. It is a difficult matter to get the exact time of incubation in a

wild state, as so many chances are that the nest may be disturbed, more especially if you have not the opportunity of visiting it at very short intervals.

May 14th—Saw one young Tewit, about a fortnight old; observed it with the glass running about the field, and on going to the place had some difficulty in seeing it, although knowing where to look. The young are covered with a soft down of a greyish colour on the back, mottled with darker markings; the neck and under parts are rather lighter in colour. They lie so close, and have such inconspicuous colouring on the upper part that they are not easy to see. This young bird, when hiding, made itself look very small, although when running about its legs seemed long, and it looked a considerable size. Though the old and young birds walk about in the fields together, I never saw any attempt on the part of the old birds to feed the young. The tradition is that the young leave the nest with the shell on their back, and they certainly leave it at a very early stage, as I have found them a foot or two away, even before they could stand upright on their legs; of course, if they have to seek food for themselves they must of necessity move about early.

May 21st—Wretchedly cold weather for the time of year, and the young tender shoots and leaves of beech and sycamore trees much injured and disfigured by the wind during the last few days, being left hanging black and withered on the branches. Found three young Tewits in a pasture-field, all close together, and apparently almost benumbed with the cold; they were very small, not more than three or four days old, and although so close together, we were unable to find the nest they had come from. The two old birds came flying round us very close before we found the young ones. Once, when passing along a country-lane, I was surprised to see a Tewit standing in the middle of the road quite still, but as we came nearer it flew away and four very small young ones hastened to hide themselves in the grass at the side, which they can do in a very short time.

May 28th—Was informed that four pairs of Tewits had been frequenting Arpley Fields near Warrington, and that two pairs bred there this year.

June 4th—Went to the Moat House Farm, Burtonwood, in the fields near which Tewits were evidently breeding, as six or seven came screaming around in close proximity, although I only passed along the road. They used to breed in these same fields many years ago.

June 18th—The earliest young birds seem now able to fly, and observed one small flock of about a dozen, but was not near enough

to distinguish how many of these were young birds; this being the earliest attempt at flocking it seems that some six weeks elapse before the young are able to fly, and during all this time they appear to be altogether unprotected, as they are on the ground, cannot fly, and do not attempt to run away, but seem to rely solely on their admirable skill in keeping out of sight. We carefully searched a large pasture field for young birds, but were unable to find one although there were certainly some in it, as six or seven old birds were flying around all the time. We afterwards found one in the same field by seeing it walking about with the old one and going to the spot. In such cases the young birds disappear long before you can get near them, and even before the old bird takes to flight. On the same date we also took three eggs which were only slightly incubated, so that there will be at least eight weeks between the early and late hatches, the latter are probably birds which have had their first lot of eggs taken. These small young ones are most active on their legs, and if lifted up and again placed on the ground will run a few yards, then stick their bill to the ground and run on again in exactly the same fashion as the old birds; they seem to do this whether there is anything to pick up or not.

July 9th—Very few single birds left in the fields now, and we saw one flock of about sixty, but too far off for minute examination. We also saw during the daytime two or three birds, apparently asleep and not standing on their legs.

July 16th—Saw only two or three single birds about the fields, but several large flocks—one which was in a rough pasture-field contained not less than 200 birds, and more than half of them appeared to be birds of the year.

August 1st—Almost all the Tewits in flocks now. After careful search over a grass field with the glass, we discovered one young bird walking about, being evidently about the latest of its kind. On going to the place we found it 'squat,' and took two photos of it in this position, which give some slight idea of the admirable protective power of unobtrusive colour and marking when no movement whatever is made by the bird. This young bird could fly well for twenty or thirty yards and no doubt would be fairly on the wing in three or four days.

August 20th—During the morning spent some time trying to get near a large flock of Tewits in a pasture-field: there were about 200 birds and all seemed to be resting, some pruning their feathers, some sitting down, but none appeared to be feeding. They seem to have a kind of daily migration, and just as dusk comes on and the first star appears they leave the fields they have frequented during the day,

and visit some damp or marshy spot, where no doubt food is plentiful. If you wait in some spot which is a kind of high road to these feeding-places you may be sure of several coming over before it gets quite dark. In the very early morning they are much scattered over the fields, but soon gather up again into flocks as the day advances, and are exceedingly wary. At this time of year they seem to be well distributed over the country, or at least the lower-lying land, as I saw numbers of them in the fields up to the sea bank between Pilling and Fleetwood.

September 10th—Newly manured grass land appears to be the most attractive locality at this date.

November 12th—A very dark night, and going down Legh Street, Warrington, was astonished to hear two or three Tewits shouting; they were evidently flying round, attracted by the bright light from the Fair Ground and Market.

November 19th—The ground was rather hard with frost, and we put up several Tewits from sheltered spots and places under trees where the cold had not rendered the ground so hard.

November 26th—Ground soft, and almost every field held several Tewits, and some favoured ones had many hundreds.

December 11th—We had a walk up the hills and on the higher ground, but saw no Tewits after leaving the low-lying land; they seem to desert the higher ground as soon as the breeding-season is over.

December 26th—Ground frozen hard, with a slight sprinkling of snow; almost all the Tewits driven away in consequence, and although we kept a careful look-out, only saw nine in three days. The frost continued till the end of the year, and the Tewits absolutely deserted this part of the country. The birds seem much more plentiful during the last few years, and possibly this is owing to the operation of the Wild Birds' Protection Act, as the close season is the only time that they appear to lose any of their wariness.

NOTE—CONCHOLOGY.

Occurrence of Dead Shells of *Crepidula fornicata* on Grimsby Beach.—While searching for specimens on the Grimsby Beach I found a shell which I did not recognise as being British, nor had I found or seen such a shell before. This was in November 1887. Some weeks after I found another. I sent one to the Natural History Museum at South Kensington. It was kindly returned to me as *Crepidula fornicata*, a native of the east coast of North America, and I was told that it had possibly been thrown out of some ship with ballast, and then washed ashore; but as I continued to find specimens I could scarcely think this to be the case. After making inquiries I have learnt that they are brought from America with the American Oysters, which are deposited at Cleethorpes for the use of visitors to this seaside resort in the summer season. As yet I have not found living specimens, although a friend assures me they are often adhering to the shells of the Oysters when first brought here.—ARTHUR SMITH, 103, Freeman Street, Great Grimsby, February 29th, 1888.

NOTES—ORNITHOLOGY.

Fieldfares near Halifax in July.—Walking in the fields on Sunday morning the 1st of July, I heard the well-remembered 'chack-chack' of the Fieldfare (*Turdus pilaris*), and, turning round, saw a flock of eight or nine flying in a north-westerly direction. They settled in a field a few hundred yards further on.—C. C. HANSON, Greetland, near Halifax, July 17th, 1888.

Osprey near Alford.—On the 3rd of May, 1888, an Osprey (*Pandion haliaëtus*) was shot at Chapel Marsh, in the parish of Mumby Chapel, near Alford, by a son of Mr. J. N. Robinson, of Anderby. I have seen the bird, which is one of last year's brood apparently. When shot its stomach was found full of fish.—JAS. EARDLEY MASON, Alford, 8th August, 1888.

Food of Crossbills.—The stomachs of two of these birds, obtained on the Yorkshire coast near Kilnsea, on the 14th and 15th of July, were crammed with the nymph of *Philaenus spumarius*, the 'cuckoo-spit' insect, no doubt picked from the blades of sea-grasses growing on the sand-dunes.—JOHN CORDEAUX, Great Cotes, Ulceby, August 9th, 1888.

Crossbill at the Farne Islands.—You ask for occurrences of the Crossbill (*Loxia curvirostra*) in the North of England. About July 17th a male was picked up dead on the Farne Islands and shown to Mr. H. G. Barclay, of Norwich, who was on the islands at the time. Whether it was a solitary example, or whether any others were seen at the time on the mainland, I know not, but Mr. Barclay did not see any others.—J. H. GURNEY, Jun., Keswick Hall, Norwich, 14th August, 1888.

NOTE—GEOLOGY.

Calverley Wood Quarries, Leeds.—The Council of the Leeds Geological Association, upon the invitation of Mr. J. Cameron Rowan, paid a visit to the above-named quarries, to inspect a fine section of the Rough Rock, the uppermost bed of the Millstone Grit series. The day was most unfavourable for any geological work, an incessant rain falling throughout, but still the observations were most perseveringly carried through. Upon arrival at Apperley Bridge Station, the party made the best of their way along the pleasant road intersecting Calverley Wood, until they were met by Messrs. Gray and Rowan, and conducted to the quarries. The first quarry visited did not present any striking features beyond the manner in which the rock had been disturbed by one of the numerous smaller faults in this neighbourhood. The second quarry was more interesting and practical, and certainly was a fine section. Here could be seen in descending order the well-known rough rock, then a ragstone, followed by a good flagstone. A good opportunity was in this quarry offered of observing the cause of the disturbance which had so dislocated the superincumbent strata. The beds, which were once deposited horizontally, or at all events with a slight dip in one direction, were noted as dipping in opposite directions over a boss of solid sandstone. This has, no doubt, been produced by tremendous lateral pressure operating in the most gradual manner; still this extremely slow but incalculably powerful force has rifted and cracked the solid sandstone above. Some remarkable instances of this force were observed in a quantity of flags which had been obtained from this quarry, which were not perfectly flat, but slightly concave. In one part of this quarry was noted a good example of a fault, with a wedge-shaped mass of sandstone between. The next quarry visited showed also a good section of the rough rock, and also afforded an opportunity of studying the composition of this well-known and most valuable stone. Just where it had been bared it was of a conglomeritic character, being full of large pebbles of whitish quartz. These were mixed with rapidly decomposing felspar. This showed undoubtedly the origin of this rock, its materials being furnished from the wear and tear of pre-existing rocks, such as granite.—S. A. ADAMSON, Leeds, July 28th, 1888.

THE YORKSHIRE NATURALISTS' UNION AT MARKET WEIGHTON.

THE Bank Holiday excursion (August 6th) of the Yorkshire Naturalists' Union had been arranged to take place in the interesting and picturesque neighbourhood of Market Weighton, including Goodmanham, Londesborough Park, and Houghton. Nature was on this day in one of her sunniest aspects, the long reign of Jupiter Pluvius seemed to be at an end, and altogether our scientists were in far different spirits than upon the unfortunate visit made recently to the Peak. The whole party assembled at the Market Weighton Railway Station, from whence the geologists, under the leadership of the Rev. E. Maule Cole, M.A., President of the Geological Section, proceeded in the direction of Goodmanham, Enthorpe, and Londesborough, whilst the second party, under the direction of Mr. Boyes, examined the district including Houghton Park and North Cliff Woods.

After the investigations of the day, a substantial tea was partaken of at the Londesborough Arms Hotel, Market Weighton, at the conclusion of which the sectional and general meetings were held at the National Schoolroom.

The general meeting was presided over by the Rev. E. Maule Cole, M.A. After the adoption of the minutes of the previous meeting, the following new members were unanimously elected:—Edward J. Lloyd, Manager, York Street Gas Works, Leeds; Rev. Alfred Clarke, M.A., Kirkby Malzeard, Ripon. The attendance included representatives from the following societies, viz.:—Leeds Naturalists' Club, York and District Field Naturalists' Society, Goole Scientific Society, Leeds Geological Association, Malton Naturalists' Society, Hull Field Naturalists' Society, Harrogate and District Naturalists' and Scientific Society, Ackworth School Natural History Society, Hull Scientific Club, and Hull Geological Society. Thanks were then voted—upon the motion of the Rev. W. C. Hey, M.A., seconded by Mr. C. H. Bould—to the Rt. Hon. the Earl of Londesborough, and to the Hon. C. Langdale, for permission to visit their estates; to the Rev. R. Digby French, for the use of the schoolroom; to the Rev. E. Maule Cole, M.A., and Messrs. F. A. Lees, J. D. Butterell and Frederick Boyes, for assistance rendered on the circular; to Mr. Proudlock, for his efficient guidance of the geological party in a topographical capacity; and to the Rev. E. M. Cole, M.A., Messrs. M. B. Slater, T. Bunker, and F. Boyes for their leadership of parties.

Upon the proposition of the Rev. E. P. Knubley, M.A., seconded by Mr. S. A. Adamson, F.G.S., and supported by the Chairman, the Rev. W. C. Hey, M.A., Messrs. S. Chadwick and M. B. Slater, it was unanimously resolved that the Secretary be requested to enrol the Union as a member of the International Geological Congress, by a subscription of 10s., which will secure the publications of the Congress, and also to make a donation of two guineas to the Guarantee Fund. Mr. Knubley had previously described the objects of the Congress, which meets every three years, and is shortly to hold a meeting in London, after the conclusion of which several geological excursions will be made, Yorkshire being honoured with two, one in the Craven district, the other along the Yorkshire coast from Saltburn to Speeton.

Mr. Adamson reported upon the continued improvement and favourable condition of the secretary, Mr. W. Denison Roebuck, F.L.S., and was requested to convey the sympathy of the members to him.

The sectional reports were then presented.

For the Vertebrate Zoology Section, which was represented by all its sectional officers, Mr. J. Backhouse, jun., F.Z.S., M.B.O.U., York, reported that only thirty-three species of birds had been met with, i.e. twenty-five residents and eight migrants. The small number of the latter is probably accounted for by the fact that a large number of our migrating birds are now moving towards the sea-coast, preparatory to their long southern voyage. It is interesting to notice, on referring to last season's reports, that on August 27th, at Welton (Brough), a few miles further south, three migrants only were observed, notwithstanding the exceptional fineness and warmth of the season. A sharp look-out was kept during the day, but without avail, for Pallas' Sand-Grouse, which species has been observed this summer in fair numbers on the lowland in the vicinity of Market Weighton.

The chairman, Rev. E. M. Cole, remarked that the Norfolk Plover has been found nesting of recent years on the wolds to his knowledge. In York Museum is a bird of this species, in immature dress, which was killed at or near Kiplingcotes a few years ago, and must have been reared in the neighbourhood.

For the Conchological Section, the Rev. W. C. Hey, M.A., York, president of the section, reported that all the species of mollusca observed were terrestrial. *Helix cantiana* was very abundant in hedge-banks. *H. aspersa* and *H. nemoralis* in a quarry at Sancton. *H. caperata* under chalk, with *H. hispida*. A small form of *Succinea putris* was the only other shell collected. Among the specimens of *H. caperata* were some examples of the variety *ornata*.

For the Entomological Section, its president, Mr. N. F. Dobrée, Beverley, reported that there was a fair muster of entomologists, but the united effort merely succeeded in finding one *Euthemonia russula*, a species known to exist on the moor there, and a few quite fresh specimens of *Bryophila perla* on the walls of houses in Market Weighton, which latter is only noteworthy as proving the lateness of the season. Mr. Dobrée had taken them on the Rhine and Moselle at the end of July this year. It was not a favourable day for diurnal lepidoptera.

The Rev. W. C. Hey reported that of Coleoptera he met with a fair number of species, chiefly by shaking refuse. Among them were *Quedius molochinus*, *Philonthus varians*, and *Tachinus marginellus*. In dung occurred *Philonthus marginatus*, *Cercyon hæmorrhoidalis*, *C. melanocephalus*, etc. *Telephorus fulvus* abounded on umbelliferous plants.

For the Botanical Section Mr. M. B. Slater reported that the botanists, under the guidance of Mr. Boyes, fortunately favoured by fine weather, were enabled to explore the route mentioned in the programme. At their sectional meeting, the total number of plants reported was 201 Flowering Plants, 7 Ferns, 20 Mosses and 5 Hepaticæ. The most interesting and rare plants seen during the ramble were the following :—*Papaver argemone*; the double-flowering form of *Chelidonium majus*, growing by a hedge-side at Sancton, evidently a stray from the adjoining garden; *Corydalis claviculata*; *Erysimum orientale*, a single specimen growing amongst potatoes near to a disused brick-yard, probably introduced with seeds or manure; *Reseda lutea*; *Silene noctiflora*; *Malva moschata* var. *alba*; *Melilotus officinalis*, probably an alien, introduced with flower-seeds; *Spiræa filipendula*, new to the East Riding; *Epilobium angustifolium*, a large mass seen in a wet situation in Houghton Wood; *Bryonia dioica* (White Bryony) reported as growing in the district; *Apium graveolens* (Alien inland). The Black Bryony (*Tamus communis*) also occurs in the district. The rarer Thistles seen were: *Onopordium acanthium*, *Carduus nutans*, and *C. heterophyllus*, whilst *C. eriophorus*, mentioned in the circular as occurring in the district, was not met with. The only Heaths seen were *Calluna vulgaris* and *Erica tetralix*. Only two Orchids were seen, *Listera ovata* and *Spiranthes autumnalis*, the latter near Houghton Wood, and one of the most interesting finds of the day. *Digitalis purpurea*, a commonly distributed plant on sandy-heathery tracts, whereas on the coralline limestone about Malton it is never seen except in cultivation. *Humulus lupulus*, the hop-plant, was reported to have been seen, perhaps not truly wild; it is often introduced, and easily establishes

itself. *Hydrocharis morsus-ranæ*, *Typha latifolia*, *T. angustifolia*, *Narthecium ossifragum*, on boggy ground. *Apera spica-venti* seen growing by the road-side near Sancton; it is a species that likes a sandy soil, and is only recorded as occurring in eighteen of the vice-counties; Baker, in his 'North Yorkshire,' records it from the vale of York at Catton, Alne, and Sutton-on-the-Forest, and it is also reported by Teesdale from Bulmer near Castle Howard. The Ferns seen included *Lastrea filix-mas*, *L. spinulosa*, and *L. dilatata*, the latter of which was by far the most abundant, and is the most common fern in the woods on the chalk wolds. *Athyrium filix-femina*, *Lomaria spicant*, *Pteris aquilina*, and *Polypodium vulgare* were also seen.

Two members, interested in Mosses, spent the time at their disposal in Houghton Wood, as the most likely place in the district for the growth of these plants. They were fortunate in finding one moss (*Hypnum imponens* Hedw.) which has only hitherto been recorded for Riccall Common in the East Riding. In the wood the trunks of the trees were very free from cortical mosses, no *Orthotricha* were seen, and *Cryphæa*, which has been found growing on trees in the neighbourhood of Sledmere, was not met with.

The following Mosses and Hepaticæ were gathered, all but one of them, however, of general distribution in moist shady woodlands:—

MOSSES.

<i>Sphagnum cymbifolium</i> Ehrh.	<i>Eurhynchium prælongum</i> Dill.
<i>Sphagnum acutifolium</i> Ehrh.	<i>Rhyncostegium confertum</i> Dicks.
<i>Dicranum scoparium</i> L.	<i>Plagiothecium sylvaticum</i> L.
<i>Dicranum bonjeani</i> DeNot.	<i>Plagiothecium denticulatum</i> L.
<i>Ceratodon purpureus</i> L.	<i>Plagiothecium undulatum</i> L.
<i>Webera nutans</i> Schreb.	<i>Amblystegium serpens</i> L.
<i>Mnium undulatum</i> Hedw.	<i>Hypnum purum</i> L.
<i>Leucodon sciurioides</i> L.	<i>Hypnum schreberi</i> Ehrh.
<i>Thuidium tamariscinum</i> Hedw.	<i>Hypnum cupressiforme</i> L.
<i>Eurhynchium striatum</i> Schreb.	<i>Hypnum imponens</i> Hedw.

This last moss is very closely allied to *H. cupressiforme*, differing in the narrower cellular tissue of the leaves, etc. It was found growing amongst heath adjoining Houghton Wood. It has been gathered on Strensall Common by Wilson and other muscologists, and is mentioned in the 'Catalogue of British Mosses' as occurring in only three vice-counties.

HEPATICÆ.

<i>Radula complanata</i> (L.).	<i>Lophocolea heterophylla</i> Schrad.
<i>Cephalozia divaricata</i> Sm.	<i>Ptilidium ciliare</i> Nees.
<i>Lophocolea bidentata</i> (L.).	

The Geological Section was numerously attended and also represented by all its sectional officers, the report being given by

Naturalist,

Mr. Samuel Chadwick, one of the secretaries. Upon our arrival the line to Beverley was traversed until, upon the south side of the cutting, those beds of the Lower Lias, belonging to the zone of *Ammonites angulatus*, or the 'grey stone,' were examined. They were extremely fossiliferous, and, had time permitted, the wallets might have been filled at the beginning of the day's work. The line was still continued until we arrived at a fine section of the grey or upper division of the lower chalk. Here ample work was found for the hammers, and some good results ensued. Among the fossils found were *Terebratula gracilis*, *T. biplicata*, *T. semi-globosa*, *Rhynchonellæ*, *Inocerami*, a tooth of *Otodus*, etc. Reddish bands were observed in this chalk. This chalk is denoted by the Government geological surveyors as flintless, but numerous specimens of a whitish flint were obtained in situ (of quite a different character to those of the middle chalk), a circumstance which occasioned much incredulity and speculation. Of course, some were strongly inclined to be orthodox in believing the lower chalk to be flintless, whilst the discoverers of the flints, fresh with their spoils from the living rock, triumphantly refuted this idea. The way was now taken by a gentle and pleasant ascent to the ancient village of Goodmanham, the 'Godmundingaham' of the venerable Bede, where, according to tradition, some most remarkable events in connection with the introduction of Christianity into our island have taken place. Some extensive earthworks were carefully walked over and examined, but the general opinion was that although some parts may have been due to the perseverance of our forefathers, yet they were really the débris of a modern chalk-pit. The pleasant gardens of the palatial rectory were then passed through to the village, and a little detour made from the geological track to inspect the venerable church, which displayed in its chancel arch and doorway its Early Norman origin. This church was viewed with great interest, as, with the greatest probability, it stands upon the site of 'the place where the idols were' of Bede, or the ancient heathen temple. There was always an idea in those early days to efface Paganism by erecting upon the site of the destroyed heathen temple a Christian church. And now a long walk was taken in the direction of Enthorpe to view the cutting now being made on the new railway intended to connect Market Weighton and Driffield. This new line has a peculiar interest to West Riding people, as, when completed, the necessity of travelling from Leeds to Bridlington either by way of Hull or Seamer will be at an end, and a more direct route secured, which will shorten the journey by about twenty miles. An immense embankment is being formed from the material obtained from the deep cutting

a little farther on, and from the freshly-cut blocks of chalk and flint some of our friends reaped a rich harvest. Mr. Chadwick, of Malton, ever on the alert in his special subject, was most assiduous, and was rewarded by the discovery of some fine hexactinellid and tetractinellid (or six-rayed and four-rayed) sponges. We now came into the cutting in the middle chalk, some 70 ft. in depth, which certainly was a magnificent section. Three bands of flint and several of fuller's earth were noticed traversing the chalk. This fuller's earth was continuous, the chalk above and below never uniting. This would point to a break now and then in the deposition of the chalk, and the influx of mud, in a greater or a lesser degree, into the cretaceous sea. Bank holiday was not observed on the new railway, as the busy bands of men were hard at work, and their operations were noted with great interest. In the immediate neighbourhood several tumuli were pointed out by the leader. From Enthorpe a devious but pleasant route was taken across the fields to Londesborough Park. Here and there outcrops of the Lower Lias were noted and attentively examined. The finely wooded park was then traversed, to the delight of all present, the fine old trees and majestic avenues attracting much admiration. Upon emerging from the park the course of the East Beck was followed some little distance to discover, if possible, those interesting passage beds between the Lower Lias and the Keuper Marls of the Trias known by the name of Rhætic. Patient search was upon this occasion of no avail, and their discovery must remain over for a further visit. A lengthened walk brought the party again to Market Weighton, during which many fine views of the broad and fertile valley were obtained. Holme-on-Spalding Moor was a prominent object, whilst far away Brayton Barf and Hambleton were discerned.

The section of Micro-Zoology and Micro-Botany was not represented. A vote of thanks to the chairman concluded the proceedings.

NOTES AND NEWS.

We have received from Mr. A. Norman Tate, F.I.C., etc., of Liverpool, the two first numbers of a new monthly illustrated journal of science, which he is editing, under the title of 'Research.' It is in quarto form, well printed and nicely illustrated, and several of its articles are of special local interest to naturalists resident in the north. One special feature is 'Our Portrait Gallery'—the first two portraits of which are those of the Rev. H. H. Higgins, M.A., the well-known Liverpool naturalist, and Sir H. E. Roscoe, M.P. Another feature is a series of articles on 'The Scientific Aspects of Health Resorts,' dealing at its outset with Harrogate and with Buxton. Another series of articles deals with 'Geological Rambles,' the first being in Charnwood Forest. Special prominence is given also to 'Local Museums,' and to the proceedings of local scientific societies, and altogether the journal is eminently readable and full of interest.

Naturalist,

HARCOURT BATH ON BRITISH BIRDS.

The Young Collector's Handbook of British Birds, and their Nests and Eggs. By W. HARCOURT BATH; with a Chapter on Collecting and Preserving Birds, by R. BOWDLER SHARPE, F.L.S., F.Z.S., &c. 112 pp. and Woodcuts. London: Swan Sonnenschein, Lowry & Co. 1888.

Under this title we have a little book which aims at furnishing in eighty 8vo pages a history of our native birds, some 400 strong. Whether it is possible to supply in so small a compass what this book pretends to do, we will not concern ourselves. But as the book is specially and wholly designed for the 'Young Collector,' we must insist that strict accuracy—the cardinal merit of such a manual—be afforded, however small the store of knowledge to be gleaned from it may be. We regret to say that such a primary attribute is entirely wanting in the book before us; indeed, the book is a veritable *multum in parvo* of errors. Here are a few specimens of Mr. W. Harcourt Bath's knowledge of British ornithology:—

Page 23. 'White's Thrush (*Turdus varius*) . . . is supposed by some to be a mere variety of the Song Thrush.' Mr. W. Harcourt Bath does not tell his readers that it is a perfectly genuine species. [The italics are ours in this and the following extracts.]

Page 33. 'The Shore Lark (*Otocorys alpestris*) inhabits the sea-coast and estuaries of rivers, and always breeds in the vicinity of its habitat.' Marked as a bird known to breed in the British Islands at page 72.

Page 35. 'The Ortolan Bunting (*Emberiza hortulana*) is also by no means common in this country. It is principally an inhabitant of the eastern counties, and is resident throughout the year.' Marked as a bird known to breed in the British Islands at page 72.

Page 35. 'The Brambling (*Fringilla montifringilla*) . . . sometimes stays to breed.' Marked as a bird known to breed in the British Islands at page 72.

Page 45. 'The Capercaillie (*Tetrao urogallus*) It is supposed by some ornithologists once to have been an indigenous inhabitant of this country.'

Page 46. 'The Ptarmigan (*Lagopus mutus*) is another moor-loving bird.'

Page 47. 'The Red-legged Partridge (*Perdix rufa*) has on several occasions been known to breed here.'

Page 49. 'The Dotterel (*Eudromias morinellus*) is a summer visitor to this country. It breeds on moors and commons.'

Page 49. 'The Ringed Plover (*Ægialitis hiaticula*) is another summer visitor, but is generally considered to be very rare.'

Page 50. 'The Spotted Redshank (*Totanus fuscus*) is also a resident species.' Marked as a bird known to breed in the British Islands at page 75.

Page 51. 'The Dunlin (*Tringa alpina*) is also a winter visitor, and sometimes stays to breed.'

Page 52. 'Bartailed Godwit (*Limosa lapponica*) is a regular winter visitor, which sometimes remains to breed.'

Page 53. 'The Whimbrel (*Numenius phaeopus*) is a winter visitor.'

As a specimen of Mr. W. Harcourt Bath's accuracy in descriptions of plumage, we note—The Nuthatch (p. 30): 'The plumage of this bird is dusky brown, and the breast greyish.'

It is, we are sorry to say, a thoroughly harmful little book; the result of the author's gross ignorance of his subject, and of an unpardonable neglect on his part to consult the many and easily accessible books on British Birds for information. Mr. Sharpe's portion of the book is in every way a satisfactory production, but we believe we have seen it issued in another form by the same publishers.—W. E. C.

NOTES—BOTANY.

Dichroism in *Viola odorata*.—Mr. Gain, on p. 193, records a very interesting variety of *Viola odorata*, in which the normal blue colour is replaced by pinkish-red. It appears that this blue colouring-matter, both in *Viola* and in other plants, is dimorphic, and presents two phases—blue and pink. In this locality a pink-flowered *Oxytropis* occurs, which always goes blue in drying, and on the other hand, the violet-blue flowered *Clematis douglasii* presents a somewhat rare variety *rosea*, in which the blue is replaced by pink, and similar varieties occur of *Anemone patens* var. *nuttalliana* (var. *rosea*) and *Aster pauciflorus* (var. *rosaceus*), in both of which pink takes the place of violet. These varieties occur in Colorado, and others like them are recorded from other countries, fully bearing out the close relation between pink and blue in flowers.—T. D. A. COCKERELL, West Cliff, Colorado, July 19th.

***Carduus acaulis* in North Lincolnshire.**—On Bank Holiday, the 6th inst., Mr. Joseph B. Davy found this thistle on the Chalk Wolds at South Ormsby, and brought me a specimen, which I sent to Mr. F. A. Lees for confirmation.—JAS. EARDLEY MASON, Alford, 10th August, 1888.

NOTE—MOLLUSCA.

***Arion ater* var. nov. *cinerea* at Nottingham.**—Mr. G. W. Mellors, of Nottingham, has lately forwarded me a number of slugs from that neighbourhood. His last consignment was of specimens from the Corporation Gardens, Wells Road, Nottingham, 25th June, including a juvenile specimen of *Limax maximus* var. *fasciata*, a few of *L. agrestis*, type and var. *sylvatica*, one *Arion bourguignati* and a few typical *A. hortensis*, several full-grown typical *A. ater*, and one fine adult of that species which is of a colour that I have never before seen in *A. ater*, viz., dark cinereous, uniform in colour, and having the foot-fringe dull brown with the usual dark cross-streaks. The cinereous colour is exactly that so prevalent in *L. maximus*.—W. DENISON ROEBUCK, Leeds, 26th June, 1888.

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A few additional localities for the Vascular Plants of the West Riding Flora, and some remarks thereon.—WM. WEST, F.L.S.

A List of some Hemiptera-Heteroptera of Lincolnshire.—J. EARDLEY MASON.

List of the Mosses and Hepatics of Westmorland.—GEORGE STABLER.

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[Verein.

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NEUROPTERA and TRICHOPTERA,

1884, 1885, 1886, and 1887.

JOSEPH CHAPPELL.

Lanc. S.

Obnoxious and Injurious Insects [*Atropos pulsatorius*, etc.]. Young Nat., April 1887, viii. 64.

T. D. A. COCKERELL.

Lanc. S.

A September Walk through Lancashire . . . [Sep. 10th, 1885, *Hemerobius nervosus* and *Limnophilus lunatus* from near Rainhill; named by R. McLachlan]. Nat., Feb. 1886, p. 59.

A. E. EATON.

Derbyshire, Cumberland, Westmorland.

A Revisional Monograph of Recent Ephemeridæ or Mayflies [The only notes referring to the North of England in this exhaustive treatise are the following:—*Cenis dimidiata* Steph., var. *rivulorum* Eaton, the Dove, near Mayfield, Ashbourne, Derbyshire, June (page 144), and the Eden in Cumberland, profusely abundant at Langwathby on certain evenings towards sunset, so as to produce an appearance as of mist or dense haze hovering over the course of the river (p. 320); *Baëtis scambus* Eaton, Ashbourne and Norbury, Derbyshire, in the Dove and in the Henmoor Brook, June and September (p. 160), and abundant in Briggle Beck and in the Eden near Little Salkeld in Addingham, Cumberland (p. 320); *B. tenax* Eaton, rills and streamlets on Ashbourne Green, Derbyshire, in June (p. 165); *Rhithrogena semicolorata* Curt., the typical race in Cumberland ascends on Cross Fell to about 1,500 ft. (p. 258); *Ecdyurus insignis* Etn., England, in rapid parts of rivers, such as . . . the Eden p. 289); *E. lateralis* Curt., nowhere has the author found it more abundant than it was along the shore of Ullswater, in Westmorland, under Kailpot Crag, on 1st July (p. 295); *Ephemerella notata*, sp. nov., locally common by shallow and swift parts of the river Eden in Cumberland during June, near the villages of Langwathby and Salkeld (p. 306)]. Linnean Transactions, 2nd Series, Zoology, vol. 3, parts 1 (Dec. 1883, pp. 1-77), 2 (July 1884, pp. 77-152), 3 (April 1885, pp. 153-230), 4 (Dec. 1885, pp. 229-281), 5 (Dec. 1887, pp. 281-319), and 6 (Feb. 1888, pp. 320-352), with 65 plates.

J. E. FLETCHER.

Westmorland.

Dragon-flies near Worcester [a specimen of *Leucorrhinia dubia* V.d.L. mentioned as captured with *Sympetrum scoticum* Donov. at Witherslack, some three or four years since, by Mr. J. H. Threlfall]. Ent. Mo. Mag., May 1884, xx. 273-4.

JAMES HARDY.

Cheviotland.

Boreus hyemalis [among mosses on the porphyry rocks behind Wooler]. Proc. Berw. Nat. Club, vol. x, part 2 (1885), p. 608; and Scott. Nat., April 1885, viii. 64.

H. WALLIS KEW.

Linc. N.

Shells of the Ponds and Streams [near Louth; with mention of the caddis-cases of *Limnophilus flavicornis* and *Phryganea grandis* in canal]. Nat. World, April 1886, iii. 62.

H. WALLIS KEW.

Linc. N.

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, 3rd April; case of *Limnophilus flavicornis* noted]. Nat., June 1886, p. 173.

H. WALLIS KEW.

Linc. N.

On the Lincolnshire Wolds [caddis-cases of *Limnophilus flavicornis* noted as very plentiful in a drain near Louth]. Nat. World, Aug. 1886, iii. 142.

Oct. 1888.

T

ROBERT MCLACHLAN.

'North of England,' 'Lincolnshire.'

The British Dragon-flies annotated [*Leucorrhinia dubia* V.d.L. is certainly common on some of the extensive moors of the north of England, and Mr. J. C. Dale also recorded it from Lincolnshire (p. 252)]. Ent. Mo. Mag., April 1884, xx. 251-256.

R. MCLACHLAN.

Cumberland, Derbyshire.

Tinodes dives, Pict., in Cumberland [Cross Fell and Onsby; previously only known from Derbyshire, as recorded in Ent. Mo. Mag., v. 277, as *T. schmidtii* Kolenati]. Ent. Mo. Mag., June 1886, xxiii. 17.

R. MCLACHLAN.

Westmorland.

Micromus aphidivorus Schrk. (*angulatus* Steph.), near London [writer possesses also one taken by J. B. Hodgkinson at Witherslack, 1863; one of the rarest of the British Hemerobiidae]. Ent. Mo. Mag., Nov. 1886, xxiii. 138.

R. MCLACHLAN.

Westmorland.

Hydroptila femoralis, Eaton, and **H. longispina**, McLach., probably only one species [the latter was recorded commonly at Ambleside by J. J. King]. Ent. Mo. Mag., July 1887, xxiv. 44-45.

[E. N. MENNELL.]

York N.E.

[**Mayfly**—species not stated—caught, in a torpid state, in a room at 20, Bootham, York]. Nat. Hist. Journ., April 15th, 1887, xi. 60.

KENNETH J. MORTON.

Westmorland.

Drepanopteryx phalænoides, L., in Scotland: a re-discovery [refers also to previous records, thus: Bowness, taken by Mr. Allis (Proc. Ent. Soc. Lond., New Series, vol. i. p. xlv. Jan. 6th, 1851); Windermere, taken by Mr. Strouvelle, and in McLachlan's Collection (R. McLachlan, Monog. Brit. Neuropt. Planip.)]. Ent. Mo. Mag., Nov. 1885, xxii. 140.

GEO. T. PORRITT.

York N.E.

Lepidoptera, etc. [=Neuroptera and Trichoptera] on the North-East Coast of Yorkshire, in August 1886 [about Saltburn and Redcar; *Chrysopa tenella*, *C. flava*, *Hemerobius micans*, *H. humuli*, *Micropterna sequax*, *Stenophylax latipennis*, *Limnophilus affinis*, *L. hirsutus*, *L. sparsus*, and *L. vittatus* noted, with observations]. Nat., March 1887, p. 69.

GEO. T. PORRITT.

York S.W.

Yorkshire Neuroptera and Orthoptera [also Trichoptera; asking for assistance in the study, partly with a view to publication of a list]. Nat., June 1887, p. 180.

GEO. T. PORRITT.

York N.E.

Hemerobius concinnus at York [at Warthill, July 18th, 1887; particulars given]. Nat., Oct. 1887, p. 290.

GEORGE ROBERTS.

York S.W.

Topography and Natural History of Lofthouse and its Neighbourhood [etc.]. Vol. ii. Leeds: printed for the Author. 1885 [viii. + 258 pages, 8vo.; reference at p. 91 to 'Dragon-flies' (species not stated)].

J. SANG.

? Durham or York N.E.

Hemerobius inconspicuus, McLach., bred [along with *Retinia pinivorana* from Scotch fir; locality not stated—query near Darlington?]. Ent. Mo. Mag., Jan. 1885, xxi. 192.

NOTE—LEPIDOPTERA.

Larvæ of Deilephila galii at Hartlepool.—I had the pleasure of taking two full-grown larvæ of *Deilephila galii* on the sand-hills here on the 23rd inst. They were feeding, quite exposed, upon *Galium verum*, during bright sunshine. With the exception of one taken over thirty years ago, they are the only ones which have been taken in our district in the larval state.—J. GARDNER, 8, Friar Terrace, Hartlepool, September 25th, 1888.

Naturalist,

A LIST OF SOME HEMIPTERA-HETEROPTERA OF LINCOLNSHIRE, WITH NOTES ON COLLECTING.

JAMES EARDLEY MASON,
Alford.

THIS paper records the results of scattered and much-curtailed collecting-days in the district of the Alford Naturalists' Society in the years 1885-6-7, and one or two in 1888.

Notices of a few species from other localities in the county—to which the word 'also' is prefixed—and by other collectors, are incorporated herewith.

The Alford district lies in Watson's 'Lincoln North' and is about ten miles square. Its eastern face skirts the shore of the North Sea, with its wind-blown sand-hills and peculiar flora; the western verge just tops the first rise of the Chalk Wolds; Mablethorpe at the north-eastern corner, and Mumby Chapel at the south-eastern, lie open to the German Ocean; while South Ormsby and Skendleby at the corresponding corners to the west look out from fair woods over the flat alluvial tract below them to the sea.

It will be observed that the natural features indicate mainly a Limestone Fauna and Flora modified by proximity to the sea and exposure to the biting north-east winds of winter and early spring.

Except where otherwise stated, each species has been taken by myself, and verified by Mr. Edward Saunders, F.L.S., to whom I am much indebted. The nomenclature and arrangement are those of his Synopsis, published 1876. 'E.M.M.' refers to the volumes of the 'Entomologists' Monthly Magazine,' and 'Brit. Hem.' to the 'British Hemiptera-Heteroptera' of Messrs. Douglas and Scott, 1865. From Mr. Douglas I have also received help and information.

GYMNOCERATA.

GEODROMICA.

CYDNIDÆ.

Sehirus picipes Fall. Mablethorpe (T. V. Wollaston, E.M.M., xii. 154).

ARTHROPTERIDÆ.

Acanthosoma hæmorrhoidale Linn. Well Vale; not uncommon on hawthorn, June and September.

Tropicoris rufipes Linn. Well Vale; on various trees, June. Also Muckton Wood, on oak, July. Common.

Oct. 1888.

BERYTIDÆ.

Berytus pygmæus Reut. Mumby Chapel; land-foot of sand-hills amongst moss; abundant in one spot, August 1887.

LYGÆIDÆ.

Scolopostethus adjunctus D. & S. Well; some, August 13th, 1887 (Charles O. Waterhouse). It would appear that this is the '*affinis*' of continental authors, but further discussion and comparison of specimens is needed before the matter can be considered as settled. Meanwhile I should be glad of specimens of any of the genus for comparison with those of the Alford district.

Scolopostethus affinis Schill. Well, Mumby Chapel, Sutton-le-Marsh; common under moss and at grass roots, April to August.

Drymus sylvaticus Fab. Well; one, May 21st, 1888. This is of the var. *ryei*.

Rhyparochromus chiragra Fab. Mumby Chapel sand-hills; not abundant, August to October.

Stygnocoris sabulosus Schill. Mumby Chapel and Sutton-le-Marsh sand-hills; common under moss, August to October.

Stygnocoris arenarius Hahn. Same as the preceding.

TINGIDIDÆ.

Piesma capitata Wolff. Well; at grass-roots, one; 3rd March, 1885.

Monanthia ampliata H.-Schff. Mumby Chapel sand-hills; abundant on thistles, August to October. Sutton-le-Marsh sand-hills, 1st June, 1888.

Monanthia dumetorum H.-Schff. Well Vale; old hawthorn, six, 25th May, 1885.

Derephysia foliacea Fall. Mumby Chapel; land-foot of sand-hills, amongst moss; plentiful in one spot, 25th August, 1887.

Acalypta parvula Fall. Mumby Chapel and Sutton-le-Marsh; amongst moss on the sand-hills, plentiful August to October. Also at Skegness, two, 8th April, 1887.

ARADIDÆ.

Aradus depressus Fab. Well Vale; under moss on stump of felled ash, six, 22nd September, 1886.

CAPSIDÆ.

Miris calcaratus Fall. Abundant on long grass and generally distributed, but less plentiful near the sea. March to September.

Miris lævigatus Linn. Same as the preceding.

Megaloceræa erratica Linn. Claythorpe, Mumby Chapel, Rigsby-with-Ailby; a few. Also at Muckton.

Megaloceræa longicornis Fall. Not yet recorded for the Alford district. At Muckton; two, 3rd August, 1885.

Megaloceræa ruficornis Fall. Mumby Chapel sand-hills; abundant on the flower-spikes of *Elymus arenarius* and *Psamma arenaria* in July and August. Most are of the variety noted by Prof. Reuter (E.M.M., xiii. 87). Well Park, one, 13th July, 1887.

The protective mimicry of these five species is very striking. Both in shape and colour they resemble the glumes of the flower-spikes of the grasses among which they live, as well green as ripened.

Teratocoris viridis D. & S. Mumby Chapel, foot of sand-hills; off *Ononis arvensis*, one, 25th July, 1887.

Mr. Saunders writes: 'I do not feel sure that this is not a female *saundersi*. The two species are very closely allied in the female.'

Leptopterna ferrugata Fall. Mumby Chapel sand-hills; one, 19th July, 1885. Well; plentiful, 16th August, 1888.

Pantilius tunicatus Fab. Rigsby-with-Ailby; hazel, one, 30th October, 1886. Well Vale; abundant on hazel, 22nd September, 1886.

Phytocoris longipennis Flor. Well Vale; several, 30th July, 1885, and 22nd September, 1886. Rigsby-with-Ailby; one, 4th October, 1886. Also at Muckton, 3rd August, 1885.

Phytocoris tiliaë Fab. This and its variety *marmoratus* are common; Alford, Rigsby-with-Ailby, Well. Note the mimicry of lichen-covered bark which the markings of this and other species of the genus exhibit.

Phytocoris reuteri Saund. Rigsby-with-Ailby; two, 6th and 13th September, 1885.

Phytocoris ulmi Linn. nec. D. & S. Alford; one, 5th September, 1885.

Oncognathus binotatus Fab. Well; one, 13th August, 1887 (Chas. O. Waterhouse).

Calocoris striatellus Fab. Rigsby-with-Ailby; oak (*Quercus robur*), two, 28th June, 1885.

Calocoris chenopodii Fall. Rigsby-with-Ailby; on *Ononis arvensis* in one spot, plentiful, 4th September, 1886.

- Calocoris bipunctatus** Fab. Alford, Rigsby-with-Ailby, Mumby Chapel, Sutton-le-Marsh; on herbage, common. Also at Muckton, 3rd Aug., 1885.
- Rhopalotomus ater** Linn. Mumby Chapel sand-hills; plentiful in one place, July 1886 and 1887. Few found with perfect antennæ.
- Liocoris tripustulatus** Fab. A common and pretty species. Claythorpe, Mumby Chapel, Rigsby-with-Ailby, Sutton-le-Marsh, Well. Mostly on nettle (*Urtica dioica*).
- Dichroöscytus rufipennis** Fall. Well Park, on *Pinus sylvestris*; plentiful, 13th July, 1887.
- Plesiocoris rugicollis** Fall. Well. Willow (*Salix* ————?), six, 8th July, 1885.
- Lygus pabulinus** Linn. Common. Alford, Mumby Chapel, Rigsby-with-Ailby, Well.
- Lygus contaminatus** Fall. Alford; one, 14th July, 1887. Well Vale; two, 30th July, 1885. Also at Muckton, 3rd August, 1885.
- Lygus pratensis** Linn. Very common. A well-marked reddish variety abounds on larch (*Larix europæa*) in Well woods.
- Lygus pastinacæ** Fall. Well Vale; *Pinus sylvestris*, one, 30th July, 1885; one, 13th July, 1887.
- Lygus kalmii** Linn. Well; beech (*Fagus sylvatica*) and hawthorn; several, 25th May, 1885. Mumby Chapel, one, 13th July, 1885. Rigsby-with-Ailby; one, 23rd August, 1885.
- Lygus cervinus** H.-Schff. Well; hawthorn and sloe (*Prunus spinosa*) five, 13th June, 1885; four, 22nd September, 1886. Rigsby-with-Ailby; ash, one, 26th September, 1886.
- Monalocoris filicis** Linn. Well; one, 29th September, 1886.
- Pithanus märkeli** H.-Schff. Alford; several, 13th July, 1887. Mumby Chapel; one, 22nd July, 1887. Also at Muckton, 3rd August, 1885.
- Cyllocoris histrionicus** Linn. Rigsby-with-Ailby; oak, four, 28th June, 1885. Well Park; oak, 3rd July, 1887. Note how the beetle *Malthodes sanguinolentus* mimics this species.
- Campyloneura virgula** H.-Schff. Well; several, ash (*Fraxinus excelsior*) and oak, 30th July and 10th September, 1885.
- Ætorhinus angulatus** Fall. Rigsby-with-Ailby; sloe, three, 9th August, 1886; one, 30th September, 1887; maple (*Acer campestre*), three, 2nd August, 1885. Well; three, 30th July, 1885. Also at Muckton, 3rd August, 1885.

- Byrsoptera rufifrons** Fall. Well; several, 13th August, 1887 (C. O. Waterhouse). Also at Muckton Wood; one, 3rd August, 1885.
- Dicyphus globulifer** Fall. Well Vale, on low herbage or on *Lychnis diurna*; four, 3rd June, 1888; several, 16th June, 1888.
- Dicyphus constrictus** Boh. Well; two — one undeveloped. This species hitherto has been recorded only for Perth, N.B., where it occurred on *Symphytum*. Here it was beaten from ash, willow, or low herbage in a small holt.
- Malacocoris chlorizans** Block. Well; abundant on hazel and ash, 10th September, 1885. Rigsby-with-Ailby; one, 30th September, 1887.
- Orthocephalus saltator** Hahn. Mablethorpe (T. V. Wollaston, Brit. Hem., 431).
- Orthotylus bilineatus** Fall. Not yet recorded for the Alford district. At Muckton; plentiful on aspen (*Populus tremula*), 3rd August, 1885.
- Orthotylus striicornis** Kirsch. Well Vale; off ash, three, 22nd September, 1886. Rigsby-with-Ailby; one, 13th September, 1886.
- Orthotylus prasinus** Fall. Well Vale; several, probably off ash, 8th and 30th July, 1885.
- Orthotylus diaphanus** Kirsch. Well; ash, four, 29th Sept., 1886.
- Orthotylus nassatus** Fab. Rigsby-with-Ailby; one, 9th August, 1886. Also at Muckton; a few, 3rd August, 1885.
- Orthotylus tenellus** Fall. Well Park; oak, two, 13th July, 1887.
- Orthotylus bicolor** D. & S. Rigsby-with-Ailby; on furze (*Ulex europæus*), one, 13th September, 1886.
- Asciodema obsoleta** D. & S. Rigsby-with-Ailby; on furze, under a willow, two, 13th September, 1886.
- Heterotoma merioptera** Scop. Common. Alford, Rigsby-with-Ailby, Well, Mumby Chapel. Also at Muckton.
- Phylus melanocephalus** Linn. Rigsby-with-Ailby; one, 28th June, 1886. Also at Muckton; some, 3rd August, 1885.
- Phylus palliceps** Fieb. Well Vale; hazel, two, 30th July, 1885. Rigsby-with-Ailby; maple, 2nd August, 1885.
- Phylus avellanæ** Schöff. Well Vale; two, 30th July, 1885.
- Psallus ambiguus** Fall. Alford; abundant on apple (*Pyrus malus*), 9th July, 1885. Well Vale; plentiful on oak, 3rd July, 1887; some on the same, 10th September, 1887.

Psallus variabilis Fall. Alford; one, 14th July, 1887. Well, and Rigsby-with-Ailby; abundant on oak, June and July, 1886 and 1887. Also at Muckton, 3rd August, 1885.

Psallus obscurellus Fall. Well Park; *Pinus sylvestris*, seven, 13th July, 1887.

Psallus sanguineus Fab. Rigsby-with-Ailby; sloe, one, 28th June, 1885; one, 9th August, 1886. Also at Muckton, 3rd August, 1885.

Psallus lepidus Fieb. Well; ash, several, 8th July, 1885.

Psallus varians H.-Schff. Well, Rigsby-with-Ailby; abundant on oak, June and July, 1885 and 1887. Also at Muckton.

Psallus salicis Kirschb. Well; willow, two, 8th July, 1885.

Plagiognathus viridulus Fall. Claxby and Well; herbage in chalk-pits, several, September 1885 and 1886.

Plagiognathus arbustorum Fab. Claythorpe, Mumby Chapel, Rigsby-with-Ailby, Well; more common than the preceding. Also at Muckton. Fond of nettle-beds.

MICROPHYSIDÆ.

Microphysa pselaphiformis West. Alford; on sycamore trunks, females plentiful, July 1887.

Microphysa elegantula Baer. Alford; on sycamore trunks, some males and many females, July 1887. Well; on oak trunks, several males and females, 13th July, 1887.

Myrmedobia coleoptrata Fall. Not recorded for Alford district. Spridlington; males (T. V. Wollaston, Brit. Hem., 485).

ANTHOCORIDÆ.

Tetrableps vittata Fieb. Rigsby-with-Ailby; larch, four, 4th October, 1886. Well; larch, several, 23rd October, 1886. Also at Donington-on-Bain, one, 25th October, 1886.

Acompcoris pygmæus Fall. Well; *Pinus sylvestris*, three, 13th July, 1887.

Temnostethus pusillus H.-Schff. Rigsby-with-Ailby; larch, one, 4th October, 1886.

Anthocoris nemorum Linn. The most common species of the district—found everywhere, but less abundant near the sea.

Anthocoris nemoralis Fab. Also very common, but more abundant near the sea, and especially so on *Hippophaë rhamnoides* (Sea Buckthorn). The var. *sarothamni* D. & S. is not uncommon.

Triphleps minutus Linn. Mumby Chapel sand-hills ; two, 20th August, 1886 ; one, 25th August, 1887.

Lyctocoris campestris Fab. Alford ; pigeon-cote, one, 10th June, 1886 ; office-table, one, 25th October, 1886. Mumby Chapel sand-hills ; three, 5th July and 18th August, 1886.

ACANTHIDÆ.

Acanthia lectularia Linn. Alford ; five, 9th May, 1887.

Acanthia columbaria Jen. Alford ; in pigeon-cote, abundant, 17th April and 10th June, 1886.

REDUVIDÆ.

Ploiaria vagabunda Linn. Rigsby-with-Ailby ; elder bush, (*Sambucus nigra*), one, 4th October, 1886 ; furze, two, 13th September, 1886.

Reduvius personatus Linn. Not yet recorded for Alford district. Lincoln ; one, July 1885 (H. T. Sills, E.M.M., xxii, 115).

NABIDÆ.

Nabis major Costa. Generally distributed.

Nabis flavomarginatus Scholz. Sand-hills ; Mablethorpe, Mumby Chapel, Sutton-le-Marsh ; August ; not uncommon.

Nabis limbatus Dahlb. Well Vale ; some, July 1885, and September 1886. Rigsby-with-Ailby ; two, 30th October, 1886. Also at Muckton, 3rd August, 1885.

Nabis lineatus Dahlb. Trusthorpe sand-hills ; one male, 24th August, 1885.

Nabis ferus Linn. Alford, Rigsby-with-Ailby, Well ; common. March to October.

Nabis rugosus Linn. Rigsby-with-Ailby, Well ; not uncommon. June to September.

The food of this family appears to be other insects, especially small lepidopterous larvæ and aphides. They hold firmly and boldly to them, and even in the sweeping-net will again seize them after being once detached.

SALDIDÆ.

Salda lateralis Fall. Mumby Chapel ; outmarsh, a few, 25th July, 1887.

Salda littoralis Linn. Mumby Chapel ; abundant on the dried-up bed of a delph, among reeds, July 1887.

Salda pilosella Thoms. Mumby Chapel; outmarsh, abundant on the mud by the brackish water, July 1887. Also South Ferriby (T. V. Wollaston, Brit. Hem., 528).

Salda orthochila Fieb. Not yet recorded for Alford district. Spridlington (T. V. Wollaston, Brit. Hem., 522).

Salda saltatoria Linn. Mumby Chapel; outmarsh and delph banks; affects mud less than *S. pilosella*; common, July 1887.

Salda cincta H.-Schff. Mumby Chapel; outmarsh, one, 25th July, 1887.

HYDRODROMICA.

HYDROMETRIDÆ.

Hydrometra stagnorum Linn. Alford, Well, Mumby Chapel. Common on stagnant water.

Gerris thoracica Schum. Generally distributed and common.

Gerris gibbifera Schum. Alford; one, 2nd April, 1885. Rigsby-with-Ailby; one, 7th July, 1886.

Gerris lacustris Linn. Generally distributed and common.

Gerris odontogaster Zett. Sutton-le-Marsh; delph, one, 16th April, 1886.

Gerris argentata Schum. Farlesthorne, brick-pit; two, 14th May, 1887.

Microvelia pygmaea Duf. Well; three, undeveloped, 30th May, 1888, Chas. O. Waterhouse.

Velia currens Fab. Generally distributed and common on all running water.

CRYPTOCERATA.

NEPIDÆ.

Nepa cinerea Linn. Generally distributed. One, walking on a drain-bank among reeds, Mumby Chapel, 25th July, 1887.

NAUCORIDÆ.

Naucoris cimicoides Linn. Not recorded for Alford District. Lincoln; Arboretum ponds (W. W. Fowler).

NOTONECTIDÆ.

Notonecta glauca Fab. Common in all stagnant water.

VAR. **maculata** Fab. Lincoln; Arboretum ponds (W. W. Fowler).

CORIXIDÆ.

Corixa geoffroyi Leach. Common.

Corixa præusta Fieb. Mumby Chapel ; one, 16th August, 1886.
Well ; one, 11th April, 1887.

Corixa hieroglyphica Duf. Well and Alford ; also at Muckton ;
common.

Corixa linnæi Fieb. Sutton-le-Marsh ; delph, one, 16th April,
1886.

Corixa sahlbergi Fieb. Rigsby-with-Ailby ; three, 8th May,
1887. Well ; some, 11th April, 1887.

Corixa striata Fieb. Sutton-le-Marsh ; delph, one, 5th August,
1885. Mumby Chapel ; delph, one, 16th Aug., 1886.

Corixa fallenii Fieb. Well ; some, April 1886 and 1887.

Corixa distincta Fieb. Well ; some, 11th April and 5th June,
1887.

Corixa fabricii Fieb. Alford ; one, 5th May, 1885. Rigsby-with-
Ailby ; one, 8th May, 1887.

Corixa fossarum Leach. Farlesthorne ; brick-pit, two, 25th May,
1887.

Cymatia coleopteata Fab. Sutton-le-Marsh ; delph, one, 16th
April, 1886.

Sigara minutissima Linn. Lincoln ; Arboretum ponds (W. W.
Fowler).

The list thus shows Lincolnshire to have records for 122 species out of some 420 known to occur in Great Britain and Ireland. All are for Lincoln North ; not one is yet recorded for Lincoln South, so far as I know ; but I have not searched all the entomological publications of the century to see whether more than the six Lincolnshire records contained in the books I have cited do exist.

So few have been the students of the order that I do not think many, if any, more Lincolnshire species of the sub-order have been noted.

It is to be hoped that fresh interest may be awakened, and that some of the energy devoted now to Lepidoptera and Coleoptera may be given to the Hemiptera.

Can it be that the name attaching to the Heteropterous section has acted as a deterrent ? In delicacy of structure some of the *bugs* vie with anything in nature. Their capture, moreover, requires no very special skill or complicated apparatus, and in the hope of inducing some to turn their attention to collecting and studying them, I give a few details, for which I trust the experienced will pardon me.

An umbrella and a sweeping-net, with a stout pocket-knife for ground exploration, not forgetting a camel's-hair pencil for the pygmies, are tools enough. The vapour of a few shred leaves of laurel in a small wide-mouthed bottle quickly kills the captures. Let the laurel be covered with a piece or two of thick wrapping paper, cut to fit evenly and closely to the sides of the bottle, and fill it up with bits of muslin or crumpled blotting-paper to provide retreats for the insects and prevent their being shaken together, thereby endangering the legs and antennæ of the more delicate. A quill passed through the cork and cut off square at the bottom, but sloping at the upper end so as to be readily placed over an insect, provides access to the interior of the bottle for all but the larger species. Take care that a stopper, a full inch or more in length and having a knob, is provided to fit—not too tightly—the quill. On taking hold of the knob with the teeth, the stopper can be extracted, and yet both hands left free for work. None but the more robust species should be touched with the fingers.

In two or three days the insects should be mounted with gum on narrow parallel-sided strips of stout white card, or on a piece which can be so cut with them upon it.

A specimen dropped sideways on a dab of gum so as to show both the upper and the underside is much better for work than the trim arrangement of the tidy man. The larger species may well be gummed *across* a narrow slip, the insect then lying to the right and left of the pin and having almost the whole of the underside free for examination. Use pins of the same size (I use No. 5), and let every slip be at the same height from the bottom of the cabinet-drawer.

Above all things keep an accurate record of the date, the locality, and the circumstances of every capture. It is a safe plan to mark the two first items on the underside of each slip. Hundreds of collections of insects are almost valueless for want of these details.

Particulars given in the list show that almost everywhere bugs may be looked for. On trees of all kinds, on low herbage, under moss, and on water both stagnant and running, and also in it and at bottom, and even on mud.

Many of the tree-loving kinds are very active, and a supplementary net about the width of one's expanded palm will be found very useful to intercept their escape from the umbrella or beating-net. Most of the *Saldidæ* are very hard to catch. For their especial wariness and activity I have devised a very effective weapon which I can commend for trial to Coleopterists when hunting on mud or soft ground out of arm's reach, such as is found about and in the delphs, which, generally speaking, are the deep pits or mere hollows made at the land-foot of

the sea-banks by excavating clay for their raising or repair. A thick vegetation of reeds and other marsh-loving plants soon hides the water where less deep, and the sand blown over from the beach, with the mud formed by the decay of vegetable matter, slowly fills up the shallower parts. Many of the rarer plants are there to be found.

But let me describe the piece of apparatus I mentioned. Take the neck of a clear glass wine- or beer-bottle broken off at the shoulder, grind the broken end to an angle of some 45 degrees or so, and insert a walking-stick at the other. With this a dive is made at the insect sitting or running on the mud or soft ground, and if the aim be good enough to cover it, a little careful pushing ensures a stopper of like material, between which and the end of the stick it is safe. For *Saldidæ* a net of any kind is almost useless.

The district and county have been too little worked as yet to render any deductions or speculations as to relative abundance or geographical distribution worthy of being submitted for consideration.

Meanwhile, a word or two in season from such of my readers as may agree with me, may be profitably expended in directing attention to this and the other less studied branches of entomology, in which there are more discoveries to be made and more need of labourers than in the well-worked tribes which first attract the notice of the young insect-hunter.

NOTE—ORNITHOLOGY.

Sand-Grouse near Whitby, Yorkshire.—Six Sand-Grouse (*Syrnhaptes paradoxus*) were shot on the ridge between Stonegate and Lealholm Bridge, the latter part of June, out of a flock of about eighty.—THOS. STEPHENSON, Whitby, September 13th, 1888.

NOTE—GEOLOGY.

Glacier Work in Airedale.—A few members of the Executive of the Leeds Geological Association have just paid a visit to a quarry at Greengates, near Apperley Bridge, which had been reported by Mr. Wm. Thornton, of Calverley, as deserving of some attention. This quarry is near the Old Lane, and a little west of the ravine which the Carr Beck has cut for itself through the shales and sandstones of the Lower Coal Measures. The Rough Rock (the uppermost bed of the Millstone Grit series) is here quarried, and the stone is very massive and of a good character. It is capped by about six feet of very stiff and tough yellow Boulder Clay, full of rounded and sub-angular blocks of gannister and other local sandstones, with fragments of coal and shale interspersed here and there. These vary in diameter from a few inches to about two feet. Many of these blocks, particularly the gannister, show fine examples of glacial striæ. This Boulder Clay had been removed in order that the underlying stone might be quarried, and the bared surface of the Rough Rock presented most strikingly that characteristic ice-worn feature of being rounded, polished, and engraved with well-defined striæ and groovings. A finer moutonné surface is not often seen. The striæ run in a N.W. and S.E. direction, showing clearly the line of travel of the Airedale glacier. The quarry is about 300 ft. above sea-level, and immediately to the south is some rising ground, which would impede the course of the glacier, and render its pressure and grinding power greater at this spot. This fine evidence of glacial erosion possesses additional value from the fact that we believe it is the furthest point down the valley of the Aire where such an observation has been noted and recorded, and great credit is due to Mr. Thornton for reporting the same.—S. A. ADAMSON, 22nd September, 1888.

DEILEPHILA GALII IN 1888.

GEORGE T. PORRITT, F.L.S., F.E.S.,
Huddersfield; Author of the List of Yorkshire Lepidoptera, etc.

It is satisfactory to note the occurrences of *Deilephila galii* in Yorkshire this season, specimens being already recorded from Scarborough, Harrogate, and Bradford. The species seems this year to have been scattered pretty well over Britain, though more imagines appear to have been taken on the Kent coast than anywhere else. After the advent of the moths in July, it was natural that the larvæ should be eagerly looked for as soon as they were big enough to be readily seen, and as was anticipated they have already been taken in some numbers. On August 30th and 31st, I had the pleasure of taking twelve on *Galium* growing on the shingle near Deal, and one in St. Margaret's Bay, and my friend, Mr. W. H. Tugwell, who was with me, and to whom I was indebted for the information that a number of the moths had been taken there several weeks previously, secured ten more, making twenty-three between us. They varied much in size, some being quite small, others apparently almost full-grown. Unfortunately, I had to return to Huddersfield early next morning, or should no doubt have taken more. Two of mine have 'gone down,' and except one, the remaining eleven appear to be doing well, so that next summer I hope to breed a nice series of this beautiful moth. Since my return home I have been informed of the capture of about 400 larvæ near Deal by several collectors together.

But not only on the south-east coast, but also on the opposite coast and much further north has searching been rewarded with success. As several moths had been taken near Liverpool, the Lancashire and Cheshire entomologists were eager in anticipation of again seeing the large spotted larvæ on the Wallasey sand-hills, where they were taken in abundance in 1870, but I believe had never been seen there since. One collector, I am told on good authority, has already secured 150 larvæ there, and two others have also taken it in some numbers. Probably more *galii* larvæ will be taken this year than ever were found in any previous season in Britain. Notwithstanding the numbers taken, on the Kent coast at any rate, from the extent and nature of the ground, only a very small proportion of the larvæ which must be there, can possibly be found, and yet, why, as is most likely, hardly a moth will be seen at large in Britain next summer; and still further, why they are here this year, and where they have come from, are enigmas I will leave for others to try and explain.

September 15th, 1888.

ADDITIONAL LOCALITIES FOR THE VASCULAR PLANTS OF THE WEST RIDING FLORA.

WILLIAM WEST, F.L.S.,

Lecturer in Botany and Materia Medica at the Bradford Technical College.

IN glancing through the pages of this welcome book, it struck me that several other localities for some of the more uncommon plants might be cited with advantage.

Ranunculus auricomus L. is hardly an uncommon plant.

I mention it simply with regard to my experience of the form *depauperata*, which I generally find to be almost the sole form on our shady banks in the Mid-Aire district, as about Gilstead and Cottingley, while the form with large petals is the one I have noticed chiefly on 'barren calcareous soil,' as in Gordale.

Ficaria verna Huds. VAR. **incumbens** F. Schultz. 'If not a hybrid with *Caltha*.' Is it possible for a plant of the *Ranunculeae* to hybridise with one of the *Helleboreae*?

Meconopsis cambrica Vig. occurs between Bell Busk and Airton in the Aire drainage, but within a stone's throw of a farm-house.

Corydalis claviculata DC. is abundant west of Doncaster.

Draba muralis L. was still frequent in Upper Wharfedale in 1887.

Silene noctiflora L. Several plants occurred in waste ground near Frizinghall in 1886.

Cerastium glomeratum Thuill. I have seen fine plants at Bingley, and I would go beyond the author's assertion, 'not one-tenth as abundant as *C. triviale*,' and say 'not one-hundredth.'

Claytonia perfoliata Don. is frequent as a weed. I have it from Ilkley and Bramham.

Hypericum dubium Leers. is frequent E. of Doncaster.

Hypericum elodes L. I have from Grassington, collected by Wm. Nuttall.

Althæa hirsuta L. This has occurred as a casual this year at Frizinghall.

Geranium sylvaticum L. Aire. In plenty a few miles N. of Skipton. Airton to Hanlith.

Euonymus europæus L. This occurs at a good elevation at Hawkswick, and flowers abundantly.

Rhamnus catharticus L. The range of this is given up to 750 ft.; it occurs in a well-grown condition at about 1,100 ft., between Malham Cove and the Tarn.

Ornithopus perpusillus L. This is fine in old quarries E. of Doncaster.

Poterium sanguisorba L. is one of the commonest plants on Hawkswick Clouder, Wharfe drainage. It is also common from Skipton to Malham.

Alchemilla alpina L. descends below 1,000 ft. at Cautley Spout; certainly to 800 ft.

Potentilla procumbens Sibth. I gathered fine specimens of this at Greenfield, in August 1880.

Comarum palustre L. is plentiful in Malham Tarn Bog.

Geum intermedium Ehrh. is common in great variety between Bell Busk and Airton. I have gathered it also in Heaton woods.

Geum rivale L. is fairly abundant about Esholt, quite away from the river.

Dryas octopetala L. This was as abundant as ever in its old station in 1887; my sons and I saw hundreds of flowers.

Lythrum salicaria L. I have seen specimens of this from Helks Wood, Ingleton, gathered by Messrs. Soppitt and Butterfield.

Epilobium roseum Schreb. I gathered several fine plants of this a few years ago at Frizinghall, in waste ground.

Epilobium tetragonum L., mentioned (and properly bracketed) from Bingley, was given under the collective name of Bentham's Flora; the plant was *E. obscurum* Schreb.

Epilobium alsinifolium Vill. comes down to about 800 ft. at Cautley Spout.

Myriophyllum spicatum L. I have seen very fine plants of this species in the pools at Goole.

Myriophyllum alterniflorum DC. This is abundant in Austwick Beck above Wharfe, between Moughton Fell and Ingleborough, as well as in Dale Beck, towards Chapel-le-Dale.

Hippuris vulgaris L. This plant is in plenty in the ditches of Malham Tarn Bog, at 1,250 ft. I noticed it in the stream between Hambleton and Bishop's Wood, and mentioned its occurrence on the occasion of the Yorkshire Naturalists' Union meeting there in 1878.

Sedum villosum L. occurs on shales on ascending Baugh Fell from Hawes Junction.

Saxifraga hypnoides L. This occurs plentifully at about the highest elevation given on the flat top of Ingleborough, and

200 ft. at least lower than '900 ft.' in several places between Kilnsey and Arncliffe. It occurs at a lower elevation still below Janet's Cove, in Gordale.

Parnassia palustris L. 'Adel Bog—perhaps now gone.' It is there yet (1888).

Ceanothe phellandrium Lam. This grows luxuriantly between Hambleton and Bishop's Wood.

Chærophyllum anthriscus Lam. is common about Baildon.

Viscum album L. This grew in a dwarfed state within the present borough of Bradford forty years ago, so an old resident informed me, who also gave detailed particulars.

Galium mollugo L. occurs near Sedbergh.

Galium uliginosum L. I have gathered this in Heaton woods. It has since been gathered near Keighley by several members of the Bradford Naturalists' Society.

Carduus nutans L. This occurs between Kilnsey and Grassington, where it can be seen in the same view with the more abundant *C. heterophyllus* L.

Anthemis arvensis L. Occurs plentifully in corn-fields near Hemsworth.

Gnaphalium dioicum L. is frequent on the top of Gordale and Hawkswick Cloulder.

Petasites hybrida Hook. is abundant from Shipley to Bingley also.

Leontodon hirtus L. I have gathered this at Eldwick at 800 ft.; this is 500 ft. higher than the upward limit given. It grows with *Gentiana amarella* L., *Linum catharticum* L., *Euphrasia officinalis* L., and other xerophilous plants.

Lactuca virosa L. This is not mentioned for the Don district. I have collected it on walls at Womersley.

Jasione montana L. This was shown to me at Wilsden by Mr. Butterfield, in fair quantity.

Vaccinium oxycoccos L. In several places on Baildon Moor.

Menyanthes trifoliata L. 'Adel Bog—now gone.' It is still there (1888).

Myosotis collina Hoffm. is abundant about Grassington.

Polygonum amphibium L. is an uncommon plant about Bradford; it occurs in the canal below Shipley and at Arthington.

Polygonum viviparum L. I have gathered in the upper part of Gordale, and Mr. Pawson brought me some fine specimens from Penyghent.

Sparganium simplex Huds. is common both in the river and canal about Saltaire and Shipley.

Lemna gibba L. I found abundantly in a pond on Rawcliffe Common.

Orchis ustulata L. I have seen from Kettlewell and with *Ophrys muscifera* Huds. at Collingham.

Luzula pilosa Willd. is abundant in the woods from Keighley to Apperley.

Juncus obtusiflorus Ehrh. occurs abundantly between Church Fenton and Towton.

Scirpus pauciflorus Lightf. I have gathered near the edge of Malham Tarn.

Scirpus setaceus L. occurs plentifully in the Hebden valley.

Carex sylvatica Huds. is hardly 'infrequent,' but abundant about Shipley, Keighley, and Hawksworth.

Melica nutans L. is an abundant plant in the woods at Grassington.

Sclerochloa rigida Link. I have gathered on walls between Giggleswick and Austwick.

Brachypodium sylvaticum R. & S. is common in Mid-Airedale.

Hordeum pratense Huds. This I have seen in some quantity in meadows near Kildwick. I afterwards saw it in 'Gill Grange,' not knowing at the time that this was another name for Holden Gill. When I was told that these localities were synonymous, I remembered that Mr. J. Eastwood had previously reported to me that he had seen this grass in Holden Gill. The station in the Gill will extend its upward range at least 300 ft.

Asplenium adiantum-nigrum L. is certainly 'rare' in W. York; I have gathered it between Sedbergh and Cautley Spout.

Ceterach officinarum Willd. I had the pain of seeing a fine tuft of this in a *tree-pot* exultingly shown to me by a person who had got it on a hill near Settle.

Aspidium angulare Willd. My friend Mr. Nuttall has this from Burley-in-Wharfedale.

Nephrodium oreopteris Desv. is not 'rare in Airedale,' but common in sub-alpine glens like those of Baildon, Keighley, and Hawksworth.

Equisetum hyemale L. I have gathered this about a mile below Shipley, so sparingly that I think it had been washed down from higher up the vale.

[**Chara vulgaris** L. (not a vascular plant) is also common above Clapham village; also at Kilnsey.]

NOTES ON THE WEST YORKSHIRE FLORA.

F. ARNOLD LEES, M.R.C.S.Eng.; L.R.C.P.Lond.;

Author of the 'Flora of West Yorkshire'; President of the Botanical Section of the Yorkshire Naturalists' Union; etc.

THE Rev. W. A. Shuffrey, M.A., of Arncliffe, kindly furnishes me with some information and emendation additional to my West Yorkshire Flora, which I think ought to be printed. The concluding note anent the *Iris* made by Miss M. Morton, and those with Mr. Friend's name appended, are added-in here for convenience sake. The serial numbers within parentheses following the names agree with those in the West Yorkshire Flora.

Ranunculus hirsutus Curt. (Flora, No. 22, p. 122). A single specimen in fruit on hills behind Sedbergh, Oct. 1887; *Hilderic Friend*. If no misnomer, then it must have been a casual plant brought with hay-seed; it cannot be indigenous on those inland hills. I have not examined the specimen.

Cerastium glomeratum Th. (Flora, No. 124, p. 164). Shire-oaks and Anston; *Hilderic Friend*. Record for T. district.

Rhamnus catharticus L. (Flora, No. 183, p. 186). Seen by me as high up as 1,100 ft. in Arncliffe Woods; *W. A. Shuffrey*. So have I on Hawbank, near Carperby, out of the riding. An unpublished station, and the nearest spot to Leeds in which it can be found is 'the limehills' beyond Roundhay: I noted two or three non-fruiting bushes there lately.

Ononis arvensis Auct. (Flora, No. 194, p. 190). In Arncliffe, as high as 900 ft.; *W. A. Shuffrey*.

Saxifraga granulata L. (Flora, No. 352, p. 249). Field near to Burnsall Rectory, and in Arncliffe churchyard; *W. A. Shuffrey*. New records for W. district.

Ægopodium podagraria L. (Flora, No. 363, p. 254). At Buckden, and near Litton at 800 ft.; *W. A. Shuffrey*.

Scabiosa arvensis L. (Flora, No. 430, p. 277). At 800 ft. near Litton; *W. A. Shuffrey*.

Senecio saracenicus L. (Flora, No. 475, p. 293). One station (to be kept secret) in Upper Wharfedale, at about 700 ft.; *W. A. Shuffrey*. No need to fear the eradication of such a tenacious-lived plant as this: most certainly an introduction to Wharfedale (for which district it is additional); this particular station may be the sequel of roots washed from some garden adjoining a beck by a flood.

Pyrola rotundifolia (vera) (No. 540A). Wooded bank sloping to Wharfe at Outershaw (*T. B. Woodd*)! New to West Riding Flora. See record in September number of this journal, p. 267.

Hieracium Friesii Hartm. (Flora, No. 517, pp. 309-10). Ingleborough (coll. F. A. Lees); *F. J. Hanbury* in Journ. Bot., 1888, xxvi, 205. Mr. Hanbury has identified some plant I sent to him, under another name (probably as *gothicum* or broad-leaved *tridentatum*), as being Hartmann's *friesii*, about which I know no more than that Nyman in his *Conspectus* places the name twelfth in his arrangement, in the Umbellata group, as a synonym of *H. rigidum* Htn. The Ingleborough and Settle scars, carefully reinvestigated by patient observers resident in their vicinity, would doubtless add much to our knowledge of the precise names, according to the modern lights, of the species occurring there, and their range of variation. Information has reached me of new localities for both *H. anglicum* and *H. gibsoni* on the Settle hills, whilst Gibson's maculate-leaved Hawkweed has turned up on Penhill, Witton, and other spots in Upper Wensleydale (Percival, spns.!), and has been known to me in Summer Lodge Gill near Gunnerside in Swaledale for a couple of years; and in the present transition state of our hawkweed-knowledge any species is worth the trouble of carefully gathering and preserving, with full notes, *made in the field*, of colour of styles, phyllary and peduncle character, etc., however 'common' the collector may himself imagine it to be.

Lamium album L. (Flora, No. 643, p. 363). Mr. W. A. Shuffrey avers this to grow near Hesleden (Heseltine) at 900 ft. elevation. This will be, I think, quite the highest point to which it ascends, naturally, in Yorkshire. I do not mean to say it would not exist on the Malham Tarn plateau at 1,200 ft., if put there, but it seems a species that thins out very rapidly as the warm sheltered hedge-banks of the lowlands are left behind.

Chenopodium bonus-henricus L. (Flora, No. 691, p. 385). Grows plentifully at Halton Gill, 1,000 ft.; *W. A. Shuffrey*. Surely planted, or out-thrown from farm garden, there!

Erythræa centaurium Pers. (No. 547). At quite 800 ft. in Hawswick Wood; *W. A. Shuffrey*. Yes, the 600 ft. limit given in Flora (p. 324) was a slip for 900 ft. I have a note, I find, of having seen it myself on Arncliffe or Hawswick 'clouder,' along with *Poterium sanguisorba*, *Gymnadenia conopsea*, etc., at fully 1,000 ft., i.e., clearly into the super-agrarian zone.

Ophrys muscifera Huds. (Flora, No. 809, p. 430). Near Arncliffe, at 800 ft.; *W. A. Shuffrey*. Yes, both this and the Narcissus mentioned below might be regarded as going quite up to the limit of the mid-agrarian zone in our Yorkshire latitude, in otherwise suitable spots, of course.

Epipactis palustris Crantz. (Flora, No. 817, p. 434). A fresh specimen sent August 16th by Mr. R. E. Leach, from Ingleton—‘Both sides Beesley’s Woods’—to show it still exists in that neighbourhood.

Narcissus pseudo-narcissus L. (Flora, No. 823, p. 438). Plentifully at about 900 ft. near Arncliffe; *W. A. Shuffrey*. This doubles our previous information as to its range.

Colchicum autumnale L. (Flora, No. 841, p. 448). At 800 ft. near Arncliffe; *W. A. Shuffrey*. This is astonishingly high, though clearly well within the upper limit of middle zone. Probably it nowhere in England runs up higher, or as high, finding here in Wharfedale-head the lime-soiled pasture and climatic protection it needs, coexisting conditions which show it not to be a ‘cold-fearer’ if in other respects a ‘weak’ species.

Asplenium adiantum-nigrum L. (Flora, No. 1006, p. 504). An untypical non-fruiting frond sent from the Ingleton neighbourhood by Mr. R. E. Leach, with somewhat the facies of robust *Asplenium pseudo-germanicum* Milde, turns out on inquiry to have been gathered in Lancashire, outside our Riding limit, on the road between Ingleton and Kirkby Lonsdale. [I may here say that the first three miles of this road, going from Ingleton, is in West Yorkshire, the next three miles crosses that tongue of Lancashire which, here wedged in, forms Leck Fell; and the last mile of the highway is in Westmorland.] *Ceterach officinarum*, sent at the same time, is in the same case: it was from a spot within Lancashire bounds; whilst five other species—*Sedum telephium*, *Daphne mezereum*, *Epipactis latifolia*, *Eriophorum latifolium*, and *Nephrodium aculeatum* var. *lonchitidioides*—were all from Ingleton.

Aspidium lonchitis Sw. A fresh specimen-frond just beginning to fruit, has been sent me by Mr. R. E. Leach (since the above lines were written). It was got off a scar or fell ‘near Feizor (not Moughton) on the right going from Austwick east, and the hill faces Ellersbridge,” which would be Oxenber Wood Scar, the elevation of which is under 1,000 ft. This seems a very low station—I might write suspiciously low—but the plant is right.

Ophioglossum vulgatum L. (Flora, No. 1028, p. 515). Found as high as 1,100 ft. near Litton; *W. A. Shuffrey*. A considerable extension of its West Yorkshire range: Mr. Baker gives its upward limit for North Yorkshire at 150 yds., i.e., 450 ft. I have seen it at 850 ft. at Hawes.

Botrychium lunaria Sw. (Flora, No. 1029, p. 516). This grows near Arncliffe; *W. A. Shuffrey*. An addition for the Wharfe

river-basin district. I did not doubt its growing therein, but never having seen it myself, and there being no record in print, I did not venture to assume anything not proven.

***Iris foetidissima* L.** (No. 821B). Not extinct, as stated by me in *Flora* (p. 437). Miss M. Morton gathered it in Brunton's old station—the bank, very near the river Yore, at the back of the house known as Little Nunwick—or rather a woman brought that lady some plants for her garden, and told her where they grew, which led to Miss Morton getting some flowers for herself.

In this connexion, with the double view of pointing a moral as well as reciting a significant tale, I may here say—with regard to my quotation from Slater's *Flora of the Ripon neighbourhood* (*Flora W.Y.*, p. 437) to the effect that Miss Morton had sought the *Iris* at Little Nunwick for years in vain—that Miss Morton informs me she gave Mr. Slater a list of the *Flora* thereabouts, *which he thought was Miss Morton's own*, whereas that lady admittedly *copied it from an old History of Ripon*. This is a fair example of how misconceptions undesignedly lead to false statements, for want of that directness and caution which should insist on candid answers to plain questions. Reticence and reservation, where records of fact are to be made, should be above all things swept away and eschewed. In this matter of *Iris* extinction I quoted positive, unqualified words from what seemed to be a reliable source, and two years afterwards I am shown to be a repeater of absolute error! *Verbum sapienti*.

NOTES—BOTANY.

The Hound's-Tongue at Skipton-in-Craven.—I had the pleasure of gathering last week, on one of the old rubbish-heaps in the Hawbank Quarry, the *Cynoglossum officinale*. It was discovered there a few days previously by Mr. L. Rotheray, of Skipton. There is only one plant; much eaten off by sheep. No record appears in Mr. Lees' 'West Yorkshire Flora' for the Aire river-basin, for which area, therefore, it is an addition. I also noted *Gentiana amarella* (very common all over the old spoil-heaps and workings about the quarry), and likewise the Parsley Piert (*Alchemilla arvensis*). Skipton is not given for the two latter in the *Flora* above-named, but Mr. Lees has seen specimens.—T. W. EDMONDSON, September 13th, 1888.

***Spiræa filipendula* in South-East Yorkshire.**—In the botanical report of the Market Weighton excursion there is added after *Spiræa filipendula* 'new to the East Riding.' This remark was certainly not in my manuscript, for I gathered the plant forty years ago near Flamborough, on the road-side at Danesdyke, and we have also a locality for it about two miles from Malton, on the Settrington road, which is also in the East Riding, and I gathered it in the latter locality this summer, where it has been known to local botanists for many years. I presume the remark has got in through some printer's error, and think it should be corrected in next month's number. The report being put as mine, it is probable some botanists will call attention to it, and I could hardly have described it as new to the East Riding when I have known it so long.—MATTHEW B. SLATER, Malton, September 16th, 1888.

Notes on Settle Plants.—Yorkshire botanists must, many of them, have read Mr. Craig-Christie's notes (*Naturalist*, August 1888, p. 225) with surprise, and particularly that throwing doubt upon the presence of the Holly Fern near Settle. The name of the late Mr. John Tatham, of Settle, has long been held, by competent judges, to be an amply sufficient guarantee for any record to which it is attached, and I am sorry that Mr. Craig-Christie should have so expressed himself as to seem to throw doubt upon his accuracy in identifying *Aspidium lonchitis* Sw., and also upon that of the careful author of the 'Flora of West Yorkshire,' merely because a tyro in his first year usually blunders over var. *lonchitidioides* of *A. aculeatum*.

As a matter of fact, I have in my possession four fronds of *A. lonchitis*, given to me twenty years ago by my late friend, Mr. Silvanus Thompson, as having been collected at Settle by his father-in-law, Mr. Tatham, and to make assurance doubly sure, these have been submitted to Mr. F. A. Lees; also, Mr. John Tatham's own herbarium contains an 1844 specimen marked 'Attermire,' and another, dated 1845, from 'Settle Scars.' In Mr. Silvanus Thompson's collection is one from 'Attermire Scars,' collected July 10th, 1847; Mrs. Silvanus Thompson recollects gathering the species, which then grew in some abundance on Attermire, with her father, Mr. Tatham, more than forty years ago. Mr. Wilson, gardener at Feizor, frequently gathered *A. lonchitis* on Moughton Scars between 1840 and 1883; his grandson, Mr. Robert Wilson of Settle, obtained it there in 1883, and on Attermire in 1882. Dr. Buck, of Settle, has fronds gathered on Attermire by the late Mr. Joseph Jackson during the period 1870-5; and Mr. Herbert Sturdy, of Settle, states that he has collected the fern on Attermire and other hills above Settle, in most years between 1874 and 1887. Dr. Silvanus Phillips Thompson, the well-known principal of the Technical College, personally obtained true *A. lonchitis* on Moughton Fell a few years ago; he also remembers his father and grandfather (Mr. Tatham) bringing specimens home from Attermire. Other evidence might be cited, but I will only add that a fresh frond of *A. lonchitis* lies before me, just received from the Misses Thompson, which is from a root obtained on Moughton Scar a year or so ago, by Mr. Timothy Green, a Settle gardener. The fern has, however, become very rare, through the rapacity of collectors for sale.

Then we have the personal evidence of Mr. F. A. Lees, who—as shown in the 'Flora'—met with a few plants at Linn Gill, Ribbleshead (also a locality fairly within the Settle district), in 1879. Surely *he* does not need the tyro's caution against *lobatum* and similar forms!

I have also just learned that Mr. Lees has received within the last month, from Mr. R. E. Leach, M.A., of Beccles, a newly-gathered frond, just beginning to show fruit, only 4 in. long by $\frac{3}{4}$ -in. broad, of true *A. lonchitis*, obtained by that gentleman himself on a scar or fell near Feizor (*not* Moughton Scar).—

Nephrodium amulum Baker. No specimens of this fern are found in Herb. Tatham or Thompson. As was already remarked in the 'Flora,' this fact is suggestive of error. But, on the other hand, Mr. Newman distinctly names Settle as a locality for *N. amulum (recurvum)* in his 'British Ferns.' And Mr. J. G. Baker, F.R.S., who was intimately acquainted with the Tatham-Thompson family, without any expression of misgiving, in 'Supplement Flora of Yorkshire' (1854), p. 142, quotes Mr. Newman's name in conjunction with Mr. Tatham's as having certified a record for 'hills about Settle.' That accurate cryptogamist, Dr. B. Carrington, in his and Prof. Miall's 'West Riding Flora' of 1862, gives an additional confirmatory record—'Settle.'

Thalictrum alpinum L. Negative evidence has usually little weight against a positive statement, but I may say that in the course of various wanderings over the Settle hills (and Penyghent) in search of *Hieracia* and other plants, I met with no trace of this. Were I to see it there, my first thought would be—who planted it?

Sir J. D. Hooker ('Student's Flora,' ed. iii, p. 2) gives for habitat 'alpine and sub-alpine bogs.' Mr. Lees tells me that he has collected *T. alpinum* in North Yorkshire (Cronkley Fell), Westmorland (Helvellyn), and Durham (Widdy Bank), and in each case it grew in peaty wet ground, best described as boggy, though it was most frequent by the stony rillelets on Widdy Bank. Surely, therefore, it would be most natural to look for the plant in similar places in West Yorkshire. May I suggest that possibly dwarfed examples of *T. minus* var. *montanum*, growing on Settle Craggs, have simulated luxuriant Scottish forms of the *alpinum*.—WILLIAM WHITWELL.

THE BRITISH ASSOCIATION AT BATH.

REV. E. P. KNUBLEY, M.A., M.B.O.U.,

Rector of Staveley; Delegate representing the Yorkshire Naturalists' Union on the General Committee of the Association.

To the Executive Council of the Yorkshire Naturalists' Union.

GENTLEMEN,—Your delegate has to report that the fifty-eighth meeting of the British Association commenced at Bath, under the presidency of Sir Frederick Bramwell, D.C.L., F.R.S., M.Inst.C.E., on Wednesday, September 5th, 1888.

Your delegate was elected to serve on the Committees of the Geological and Biological Sections.

The Council nominated Dr. John Evans, Treasurer R.S., chairman; Mr. W. Whittaker, F.R.S., vice-chairman; and Prof. R. Meldola, F.R.S., secretary to the Conference of Delegates of Corresponding Societies for the Bath meeting. The Conference met on Thursday, September 6th, and again on Tuesday, September 11th. Most of the delegates also attended a dinner on the former day, for which arrangements had been made by the secretary.

At the first meeting the Report of the Corresponding Societies Committee was presented. It showed that thirty-two delegates were nominated for the Manchester meeting. The following matters were referred to as having engaged the attention of various committees of the Association during the past year.

PREHISTORIC REMAINS COMMITTEE.—This is a committee formed for the purpose of ascertaining and recording the localities in the British Islands in which evidences of the existence of prehistoric inhabitants of the country are found. Mr. J. W. Davis, secretary, stated that this committee had been carrying on its work during the past year. Two reports had been obtained relating to the bronze implements of the East and West Ridings of Yorkshire, and several others had been promised.

PRESERVATION OF STONEHENGE.—ANCIENT MONUMENTS ACT.—It was pointed out that the local societies could do good service in inducing the proprietors of prehistoric remains to communicate with General Pitt-Rivers, the Inspector of Ancient Monuments, with the object of placing these remains under Government protection. Sir John Lubbock explained what Parliament had done in the matter, and laid his own views before the committee.

PROVINCIAL MUSEUMS COMMITTEE.—Mr. F. T. Mott stated that this committee had been engaged during the past year in collect-

ing particulars respecting museums other than those in London. Considerable assistance had been given by the secretaries of many of the local societies.

EARTH-TREMORS COMMITTEE.—This is a committee for the purpose of considering the advisability and possibility of establishing in other parts of the country observations upon the prevalence of earth-tremors, similar to those now being made in Durham in connection with coal-mine explosions. Prof. Lebour, the secretary, said that the corresponding societies, if they would interest themselves in the matter, might be the means of establishing a great network of seismoscopes with a few seismographs in suitable localities, and results of value would by this means be in all probability obtained. A sufficiently good seismoscope might be had for about £2, a seismograph for £14 to £15, and the cost of keeping them in order would not be great. He hoped the delegates present would help in establishing such a network of observing stations all over the country, and he would be happy to communicate with anyone interested in the subject.

Prof. Ewing said that it certainly seemed to him that no bodies could more appropriately undertake that work than the local societies represented at the Conference acting in conjunction with a committee of the Association. From recent observations it appeared probable that tremors would be found wherever they were tested for with sufficient delicacy, so that a society undertaking the search was not likely to be disappointed.

TEMPERATURE VARIATION IN LAKES, RIVERS, AND ESTUARIES.—This committee, of which Mr. John Murray is the secretary, is appointed to arrange for an investigation of the seasonal variations of temperature in lakes, rivers, and estuaries in various parts of the United Kingdom, in co-operation with the local societies represented at the Association.

Dr. H. R. Mill proposed that the Societies situated in the neighbourhood of rivers and estuaries, which were willing to undertake this work, should appoint some member to observe the temperature daily or weekly, as the case might be, in accordance with the rules to be drawn up by the committee.

Mr. J. W. Davis raised the question whether it would be of use to extend the observations to the streams in manufacturing districts. He also asked what the committee proposed to consider an estuary.

Dr. Mill, in reply, said that the temperature of streams in manufacturing districts should certainly be ascertained in as many cases as possible, in order to find whether the increase of temperature of a river passing through a manufacturing town is in any sense permanent.

The term 'estuary' should, in his opinion, be used as meaning all parts of a tidal river between the upper limit of the tide and the open sea.

THE UNDERGROUND WATER COMMITTEE requires information as to the depth of wells, the sections passed through, the height at which the water stands before and after pumping, daily records of the height and chemical analyses of the waters.

THE ERRATIC BLOCKS COMMITTEE wants information as to the position, size, and character of boulders of foreign origin that may occur in drift-covered areas, and is anxious that the position of the same should be noted on the one-inch map of the Ordnance Survey, with a view to taking steps for their preservation. It was mentioned that Mr. S. A. Adamson, F.G.S., had rendered valuable assistance to this committee on behalf of the Yorkshire Naturalists' Union.

THE SEA COASTS EROSION COMMITTEE.—With reference to the work of this committee, Mr. Topley stated that but little assistance had as yet been received from the local Societies, those in maritime counties might greatly assist the committee by local observations as to present changes, and by researches as to past conditions of the coast.

LIFE-HISTORIES OF PLANTS.—Prof. Bayley Balfour forwarded a communication in which he stated that the discovery and description of new forms, and the distribution of our indigenous plants is, in Botany, the line upon which most of the energies of local societies are principally spent, whilst habit, construction, and generally the features of life-history of plants come in for attention in quite a secondary way. This arose, he thought, in great part from the prevalent notion that the facts of the life-history of our common plants are all well known, and that there was little, if anything, more to find out about them. This was an erroneous idea. He thought that good results would follow if the members of their societies were to study the life-histories of indigenous plants in their entirety, *i.e.*, from the stage of embryo in the seed up to the production of fruit and seed again. Anyone who would take up this line of study would assuredly derive great pleasure from it, and would be able to add a great deal to the sum of our knowledge of plant-life. Such work could be well combined with the more usual systematic work, it could be easily accomplished, and it would be found to give much additional interest to the study of British Botany.

STATUS OF THE CONFERENCE OF DELEGATES.—At the Manchester meeting of the Association an important resolution was framed, at the instigation of Sir Douglas Galton, with the object of conferring additional powers upon the Conference. According to the former rules, the delegates had no power of submitting resolutions or recommendations

to the Committee of Recommendations, but the resolution referred to is calculated to give them the necessary power, and thus to put the Conference on the same footing as the Sectional Committees. The resolution, which is now a rule of the Association, is as follows: 'That the Conference of Delegates of Corresponding Societies be empowered to send recommendations to the Committee of Recommendations for their consideration, and for report to the General Committee.'

The Leeds Geological Association has been enrolled for the first time as a corresponding society.

At the second sitting of the Conference, in addition to the matters already alluded to, the following subjects were brought before the delegates:—

GEOLOGICAL PHOTOGRAPHY.—The value of collecting photographs of geological strata was pointed out, especially of those which were not likely to be permanent, and depositing them in local museums, where they could be consulted.

DISAPPEARANCE OF LOCAL PLANTS.—Prof. Hillhouse gave some account of the work of the committee which was appointed for the purpose of collecting information as to the disappearance of native plants from their local habitats. He stated that, in order that the work might be done thoroughly, the committee had hitherto confined their work to Scotland. He thought that local societies might render valuable assistance.

It was stated that it would add to the value of the Annual Report if many more local societies which published reports, etc., were affiliated as Corresponding Societies, in order that the titles of the papers which they published might appear in the index.

INTERNATIONAL GEOLOGICAL CONGRESS.—Owing to the impending meeting of this Congress, a large number of foreign visitors attended the Geological Section. The great value of the official reports of the meeting and excursions was urged upon the delegates. It was stated that the meetings of the Congress would be held at Burlington Gardens between the 17th and 22nd of September. Six excursions were arranged to take place in the week after the meeting. Two of these have a direct bearing upon the geology of the county, for the first was arranged to embrace a survey of the Yorkshire coast from Speeton to Saltburn, and the second was directed to an examination of the rocks in the Craven district.

The following papers, which are of interest to Yorkshire naturalists, were read in their respective sections:—

DR. H. W. CROSSKEY.—Sixteenth Report of the Erratic Blocks Committee, which included a great number of reports sent up by the Boulder Committee of the Yorkshire Naturalists' Union.

JAMES SPENCER.—On the occurrence of a boulder of Granitoid Gneiss or Gneissoid Granite, in the Halifax Hard Bed Coal.

G. W. LAMPLUGH.—Report on an Ancient Sea Beach near Bridlington.

PROF. W. C. WILLIAMSON.—Report on the Flora of the Carboniferous Rocks of Lancashire and West Yorkshire.

PROF. NEWTON.—On the Irruption of *Syrrhaptēs paradoxus*. In the course of his remarks, Prof. Newton stated that he had evidence that Pallas' Sand-Grouse had nested this year in the neighbourhood of Beverley.

PROF. NEWTON.—Report of the Committee on Migration of Birds. The Report stated that the inquiry had been continued for nine years, and that an immense number of facts had been collected and brought together in the Annual Reports in connection with the seasonal movements of birds on the British coasts. They now wished to utilize, digest, and classify the mass of information at their disposal. The committee had much pleasure in stating that one of their number, Mr. William Eagle Clarke, of the Museum of Science and Art in Edinburgh, had undertaken the laborious task of thus reducing the mass of observations collected. At a subsequent meeting of the Biological section, the name of your delegate was added to the committee.

The General Committee of the Association unanimously accepted the invitation of Leeds to hold their 1890 meeting in that town.

September 15th, 1888.

NOTES—BOTANY.

Goodyera repens near Market Weighton, S.E. Yorks.—Mr. J. Beanland has shown me a plant gathered in Houghton Hall Woods on the occasion of the Market Weighton meeting of the Yorkshire Naturalists' Union; thirty or forty plants of it were seen. It is undoubtedly *Goodyera repens* R.Br., which Mr. Beanland thought it might be, as he found that it did not agree with *Spiranthes autumnalis*, which I believe it was thought to be. It will, no doubt, have been accidentally introduced with coniferous plantings.—WM. WEST, Bradford, August 29th, 1888.

Goodyera repens near Market Weighton.—Although in my report of plants collected at the excursion I included, under the name of *Spiranthes autumnalis*, the rare orchid gathered in Houghton Hall Wood by Mr. J. Marshall, I was suspicious that it would prove to be another plant. Since then I have re-examined it, and Mr. George Webster has compared it with *Goodyera repens* R. Br. (a plant I have myself never seen either growing or dried); he confirms me that it is that species. It is thus a much rarer plant than the *Spiranthes*, and being of a northern and arctic type, the find is of great botanical significance. This appears to be the first record for Yorkshire; Mr. Baker, however, in his Lake Flora, mentions it—on the authority of Mr. F. Arnold Lees—as growing in a fir plantation near the Eden at Armathwaite. Bentham and Babington cite it as in the fir forests of the North of Scotland, and in Bouvier's Flore des Alpes, its habitat is thus given: Bois du Jura et des Alpes, et dans les bois de Sapins à la faucille, au Colombier.—M. B. SLATER, Malton, 26th September, 1888.

ON THE HEPATICÆ AND MUSCI OF WESTMORLAND.

GEORGE STABLER,
Levens, Milnthorpe.

So far as I am aware, no detailed list or account of the hepatics and mosses of Westmorland has yet been published; this fact, and the solicitations of some of my botanical friends, have induced me to undertake the task.

The county of Westmorland is situated in the north-west of England, between $54^{\circ} 10'$ and $54^{\circ} 42'$ N. latitude, and between $2^{\circ} 9'$ and $3^{\circ} 10'$ W. longitude. Roughly speaking, it is about forty miles in length and thirty miles in width, and its area is 786 square miles. Its outline is very irregular.

The mean annual temperature at Kendal is 46.76° Fah., the mean day maximum being 64.018° Fah., and the mean night minimum 26.745° Fah. January is the coldest month, with a mean temperature of 36.130° for the last sixty-five years, and July the warmest, with a mean of 59.45° for the same period. For these data I am indebted to Mr. Richard Nelson, of Ivy Garth, Kendal. A considerable amount of snow covers the higher mountains in winter, and sometimes the remains of drifts are seen in the middle of June; yet on and near the shore of Morecambe Bay it very seldom lies long, so that it is possible to botanize there almost all the year round.

The following table shows the rainfall in various parts of the county. The names of the gentlemen to whom I am indebted for the data, and to whom I tender my thanks, appear in the second column:—

Station.	Registrar.	Average Number of Inches.	No. of Years	For the Years	Aver. No. of Rainy Days.
Little Langdale ...	F. M. T. Jones ...	104.30	3	1879-81	183
Patterdale, Greenside ...	T. Taylor ...	92.42	14	1874-87	—
Ambleside, Lesketh How	F. M. T. Jones ...	78.32	9	1879-87	210
Grasmere, High Close ...	„ ...	69.33	10	1878-87	187
Windermere, Fallbarrow	A. Rawson ...	62.90	10	1877-86	210
Orton ...	Rev. E. Holme ...	53.37	10	1878-87	167
Kendal ...	R. J. Nelson ...	52.41	100	1778-87	181
„ ...	„ ...	48.47	10	1878-87	—
Kirkby Lonsdale...	G. J. Symons, F.R.S.	46.20	10	1870-79	—
Ulleswater, Sharrow Bay	A. Parkin ...	43.10	10	1870-79	—
Arnside ...	J. P. Drewitt ...	42.17	4	1884-87	167
Kirkby Stephen ...	T. Mason ...	39.82	10	1878-87	163
Penrith, Blencowe School	T. Fawcett ...	38.44	10	1878-87	—
Penrith, Lowther Castle	T. Clark ...	37.36	5	1883-87	124
Appleby ...	Dr. Armstrong ...	33.71	7	1881-87	181

I have not been able to obtain statistics for one of my favourite valleys, that of Mardale, except for the last dry year (1887), when Mr. G. J. Symons registered in three different parts of the valley the following quantities, 76·55, 68·95, and 45·50 inches (Naddle Forest). Just over the western boundary of the county is one of the wettest parts of the island, over 220 inches having been recorded in one year at Seathwaite in Borrowdale.

Around the head of Morecambe Bay and across the southern part of the county, the principal rocks are those of the Carboniferous formation. The same system of rocks also occupies an extensive district in the north-east part of the county, stretching along each side of the Eden Valley from Mallerstang and Ravenstonedale to the borders of Cumberland, the limestone of the middle of the valley being overlaid on both sides of the river from Kirkby Stephen northward by Permian strata, chiefly sandstone. The rest of the county, to the north and south-west of these two limestone areas respectively, is occupied by Silurian rocks. The boundary between the upper and lower Silurians is marked by the very narrow strip of Coniston Limestone running in a N.E. direction from the head of Windermere across the upper part of the valleys of Troutbeck, Kentmere, and Long Sleddale towards Shap Fell. The Conglomerate, which in a similar manner marks the division between the Carboniferous and Silurian formations, appears here and there, as at the foot of Ulleswater, Shap Wells, by the river Lune at Barbon, and in the valley of the river Mint near Kendal. The summits of Wild Boar Fell and of the higher portions of the Pennine Hills are of millstone grit; basalt appears at Caldron Snout in the upper Tees Valley, and along the western slope of the Pennine Hills; and a small exposure of granite occurs about the centre of the county to the S.W. of Shap.

Commencing at the sands around the head of Morecambe Bay and the estuary of the river Kent in the south-west, the county rises very irregularly to an elevation of about 3,000 ft. in its north-western part. On its eastern side the Pennines reach over 2,000 ft. in height. The main watershed runs east and west. The northern slope is drained by the Eden, and the southern by the Lune, the Kent, and some smaller streams.

Within the boundaries of the county are numerous scars, crags and scree,* lakes and tarns, glens and ghylls, extensive peat-mosses and alpine bogs, water-falls and rocky streams, as well as remains of ancient forest.

* Scree : the sloping masses of débris at the base of a precipice.

All these, together with the position of the county, its temperature, its excessive and varied rainfall, its geological constitution, the altitude of its mountains, and its proximity to the sea, combine to make it a district peculiarly well adapted as a home for mosses. When thoroughly explored, it should stand amongst the foremost English counties from a bryological point of view, and occupy no mean position when compared with other parts of the British Islands.

It will perhaps not be out of place here to give a short account of Westmorland bryology. In this part of the subject I have been greatly assisted by the generous permission of Mr. Harry Arnold, of Arncliffe, to consult his valuable library containing several old and rare books, especially connected with local botany. The works herein mentioned will be found arranged in chronological order. From the older writers, the few Westmorland mosses with their habitats are extracted, and I have to the earlier references added synonyms when necessary.

The record commences with *Polytrichum commune* (L.), that handsome giant among acrocarpous mosses. It was first described in a catalogue of plants found around Geissen (1718) by Dillenius, at which time Ray had been dead thirteen years. As Dillenius edited the 3rd edition (1724) of Ray's Synopsis, he is answerable for the insertion of the Westmorland locality, although in his *Historia Muscorum* of 1741 it is not mentioned.

1724. DILLENII (RAY). Synopsis Methodica Stirp. Brit., ed. 3.

'*Polytrichum vulgare et majus capsula quadrangulati*. Great Golden Maiden-hair or Goldilocks. [*Polytrichum commune* L.]

In paludosis et putrido copiosissime in montosis.—Westmorlandicis, etc.'

1777. STEPHEN ROBSON. The British Flora.

'*Fontinalis squamosa* L. In brooks in Westmorland.' p. 272.

'*Fontinalis pennata* L. Huds. [*Neckera fontinaloides* (Lam.). *N. pumila* Bry. Brit.] On trunks of trees in woods between Troutbeck and Ambleside in Westmorland.' p. 272.

'*Phascum pedunculatum* Huds. [*Splachnum pedunculatum* (Huds.) Lindb. *S. sphaericum* Bry. Brit.] On moist heaths in Westmorland.' p. 272.

'*Bryum apocarpum* L. [*Grimmia apocarpa* Sch. Syn. (*Schistidium* Bry. Brit.).] In Westmorland.' p. 281.

Obs.—It may be observed that at least two out of the four foregoing mosses are probably in the first edition of Hudson's Fl. Angl., 1762, in which case the Fl. Angl. should precede Robson's Brit. Fl. I have only had access to the 2nd and 3rd editions of Fl. Angl.

1778. WM. HUDSON. Fl. Angl., ed. 2 (also ed. 3).

'*Fontinalis pennata* L.' [*N. fontinaloides* (Lam.).] 'In arborum truncis in sylvis inter Troutbeck et Ambleside.'

'*Bryum crudum* L. [*Pohlia cruda* (L.). *Webera cruda* Sch. Synop.] In sylvis circa Rydall in comitatu Westmorlandico.'

'*Splachnum vasculosum* Huds. Fl. Angl. (1798). [*Phascum pedunculatum* Huds. Ed. 1, 1762.] In ericetis montosis et humidis in comitatibus Eboracensi et Westmorlandico passim.'

'*Jungermania nemorosa* Dill. [*Martinellia nemorosa* (L.) B. Gr., *Scapania nemorosa* Nat. E.] In sylvis et umbrosis udis in comitatu Westmorlandico.'

'*Jungermania ciliaris* L. [*Trichocolea tomentella* (Ehrh.) Dum.] Habitat in sylvis et ericetis udis et ad rivulos in comitatibus Eboracensi, Cumberlandico et Westmorlandico passim.'

1796. W. WITHERING. An Arrangement of British Plants, ed. 3.

'*Hypnum pennatum* With.' [*Neckera fontinaloides* (Lam.).] Withering gives Hudson's habitat, and makes the mistake of giving the same plant under the name of *Fontinalis pennata* (L.) as another species.

'*Mnium fontanum* L. [*Philonotis fontana* (L.) Brid.] Cold clear streams in Westmorland on the sides of hills; Mr. (J.) Gough.'

'*Bryum crudum* L. Huds. [= *Pohlia cruda* (L.).] Woods about Rydal; Hudson.'

'*Hypnum crispum* With. [= *Neckera crispa* (L.) Hedw.] About Kirkby Lonsdale, Westmorland; Dr. J. E. Smith.'

'*Hypnum viticulosum* L. [= *Anomodon viticulosus* (L.) H. & T.] By north-west corner of the bridge at Kirkby Lonsdale; Dr. J. E. Smith.'

'*Hypnum loreum* L. [= *Hylocomium loreum* (L.) Br. Eur.] Near Ambleside, Westmorland; Dr. J. E. Smith.

'*Jungermania nemorosa* Dill.' [= *Scapania nemorosa*.]

'*Jungermania ciliaris* With.' [*Trichocolea tomentella*.] The habitats of the two last are from Hudson: see above.

1804. J. E. SMITH. Flora Britannica.

'*Grimmia pusilla* Smith. [*Seligeria recurvata* Hedw. (1787). *S. setacea* (Wulf.) (1781).] In palustribus montosis. Near Ambleside, Westmorland.'

'*Trichostomum fontinaloides* Hed. [*Sekra minor* (L.), *Cinclidotus fontinaloides* (Lam.) P.B.] On rocks in the river at Kirkby Lonsdale, Westmorland, above the bridge, June 1783; Dr. J. E. Smith.'



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The Editors hope to publish the following papers within the next few months:—

List of the Mosses and Hepatics of Westmorland.—GEORGE STABLER.

Notes on the Food and Habits of Slugs and Snails.—W. A. GAIN, M.C.S.

Yorkshire Boulder Committee—Second Year's Work.—S. A. ADAMSON, F.G.S.

Bibliography: Geology and Palæontology, 1887.

The Natterjack Toad in Cheshire and Lancashire.—LINNÆUS GREENING.

Natural History of Lincolnshire.—The next instalment of this is to be upon the *Mammalia*, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to anyone willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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THE NATURALIST

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.



EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

AND

WM. EAGLE CLARKE, F.L.S., M.B.O.U.,

CORRESPONDIKENDER MITGLIED DES ORNITHOLOGISCHEN VEREINS IN WIEN.

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 Street, Grimsby, July 11th, 1888.

Lincolnshire Natural History.—Co-operation in collecting information
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'*Neckera pumila* H.' [= *N. fontinaloides* (Lam.).] 'On trees between Troutbeck and Ambleside, as mentioned by W. Hudson where I found it in 1782; J. E. Smith.'

'*Bryum crudum* L.' [= *Pohlia cruda* (L.).] Hudson's habitat.

1805. TURNER and DILLWYN. The Botanist's Guide.

In this work seven mosses and two hepatics are recorded for Westmorland. They are:—*Splachnum sphæricum* β Musc. Hib., *Grimmia pusilla* Sm., *Trichostomum fontinaloides* Huds., *Neckera pumila* H., *Bryum crudum* L., *Hypnum loreum* L., *Fontinalis squamosa* L., *Jungermania tomentella*, and *J. lanceolata* Weiss.

All of these, except the last, had been previously recorded. Of *J. lanceolata* it is said, 'woods and moist shady places (Westmorland); Hudson.' This remark would lead one to suppose that this species is not rare. Twelve years ago I found it near Windermere with its characteristic siphon-like colesules. In no other place have I seen it growing. It will be seen that I have doubt as to the plant of Hudson being the true one. In this I am supported by a remark of Sir W. J. Hooker's in the British Flora, vol. ii (1833), p. 108, in which he says: 'Of this (*J. lanceolata*) I have never seen British specimens; and I suspect the authors just mentioned (Hudson, Withering, and Lightfoot) may have mistaken some other species for it,' and Dr. Carrington remarks that *Mylia anomala* was long confounded with *J. lanceolata* Brit. Hep.

1812-16. W. J. HOOKER. British Jungermanniæ.

In this work the following six species are given as Westmorland plants:—

'*Jungermania lanceolata* L.' [= *Lioclæna lanceolata*,] pl. 18.

Under this, Hooker says: "I am induced to represent the species in this work rather with a view of calling the attention of botanists of my country to what I conceive to be the true *J. lanceolata* of Linnæus than from the conviction of its ever having been found in Britain." The true plant was afterwards found by Borrer at Tunbridge Wells and by Dr. Spruce in the upper part of the vale of the Yorkshire Esk (Cronkley Gill), December 1847, and was first figured and described from British specimens by him in Eng. Bot. Supp., Oct. 1848.

'*Jungermania Taylora* Hk. [*Mylia Taylora* (Hk.)] pl. 57. Two miles from Ambleside to the north of the Penrith road, and on the rock behind the hill at Patterdale.'

'*Jungermania radicans* [= *Marsupella emarginata*] with *J. Taylora*.'

'*Jungermania barbata* with *J. Taylora*.'

'*Jungermania hyalina* Lyell [*Nardia hyalina*], Pl. 63. Amongst the rocks immediately above Stock Ghyll Force near Ambleside (Mr. Lyell).'

'*Jungermania Orcadensis* Hk. Pl. 71. Ambleside (Mr. Lyell).'

1818. HOOKER and TAYLOR. *Muscologia Britannica*.

'*Hypnum Crista-castrensis* L. [= *Plitium Crista-castrensis* (L.) DeNot.] In a wood at the head of Haweswater (Rev. Jas. Dalton).'

1841. J. E. SMITH. *English Botany*, 2nd edition.

'*Hypnum incurvatum* Brid. [= *Stereodon incurvatus* (Schrad.)]. Near Kendal, on the way to Ambleside.' Vol. viii., p. 104.

The figure is dated 1st July, 1839, so I infer that this is the locality where Mr. Wilson found it on the 14th of July, 1838.

1843. R. SPRUCE. On the Mosses and Hepaticæ of Teesdale.

In this paper we find recorded from Caldron Snout and Maize Beck, seven mosses and four hepatics. They are:—*Bryum julaceum* v. *concinnum* [= *B. concinnum* Spruce]; *Bryum Zierii* Dicks. [= *Plagiobryum Zierii* (Dicks.)]; *Grimmia spiralis* H. & T. [= *G. funalis* (Schwaeg) Schpr.]; *Physcomitrium ericetorum* DeNot. [= *Funaria obtusa* (Dicks.)]; *Splachnum mnioides* L. fil. [= *Tetraplodon bryoides* (Zoeg.)]; *Tetradontium Brownianum* (Dicks.) [= *Georgia Brownii* (Dicks.)]; *Zygodon Lapponicus* B. & S. [= *Anæctangium Lapponicum* (Hedw.)]; *Jungermania incisa* Schrad.; *J. setacea* Web. [= *Lepidozia setacea* (Web.)]; *J. spinulosa* Dicks. [= *Plagiochila spinulosa* (Dicks.)]; *J. undulata* L. [= *Scapania undulata* (L.)].

1845. J. SIDEBOTHAM in *The Phytologist*, vol. ii., p. 316.

In July of this year the following sixteen mosses were collected in Westmorland by Mr. Sidebotham. For the sake of brevity I here omit the localities, which will be given in the list under their respective species.

Andreaea alpina Dill.; *A. Rothii* Web. et M.; *A. rupestris* L.; *Bartramia Halleriana* Hedw.; *Bryum crudum* Schreb.; *Bry.*

elongatum Dicks.; *Bry. julaceum* Sm. [= *B. filiforme* Dicks.]; *Bry. turbinatum* Hedw. (?); *Bry. pseudotriquetrum* Schwg.; *Bry. erythrocarpum* (?); *Dicranum scoparium* Hedw.; *Diphyscium foliosum* Web. et M.; *Hedwigia æstiva* Hk. [*Anæctangium compactum* Schwg.]; *Ædipodium Griffithianum* Schw.; *Pterogonium gracile* Sw.; *Weissia fugax* Hedw. [= *Rhabdoweisia striata* Schrad.].

Obs.—Mr. Sidebotham does not say whether his plant is *Bryum erythrocarpum* Schwaeg [*Bry. sanguineum* Brid.] or *Bry. erythrocarpum* Brid. [*Bry. atropurpureum* Web. et M.]. If it be the former it is the only record for Westmorland.

1846. W. BORRER in *The Phytologist*, vol. ii., p. 435.

Mr. Borrer's list of ten mosses, collected in 1845. They are:—*Ædipodium Griffithianum* Schwg.; *Grimmia torta* Hsch. [= *G. torquata* Hsch.]; *G. spiralis* H. & T.; *Orthotrichum rupicola* Funck. [*O. rupestre* Schleich.]; *Hypnum Crista-castrensis* L.; *Bryum albicans* Wahl.; *Bry. julaceum* Sm.; *Bry. Zierii* Dicks.; *Bry. acuminatum* B. & S.; *Bry. mnioides* Wils. [= *Mnium subglobosum* B. & S.].

1855. WILLIAM WILSON. *Bryologia Britannica*.

Mr. Wilson in his classic *Bryologia* has given Westmorland habitats for the following ten mosses:—*Grimmia spiralis* H. & T., *Grimmia torta* Hsch., *Orthotrichum crispulum* Hsch., *O. crispum* Hedw., *O. Bruchii* Brid., *Bryum concinnatum* Spruce, *Antitrichia curtipendula* Brid., *Hypnum palustre* β Bry. Brit., (*H. eugyrium* Schpr.), *H. Crista-castrensis* L., *H. incurvatum* Brid. [(*Stereodon incurvatus* (Schrad.) Mitt.)]

1855. HARRIET MARTINEAU. *A Complete Guide to the English Lakes*.

The List of 'Flowering Plants, Ferns, and Mosses' of 'Windermere and its Neighbourhood' in this work was drawn up by Dr. Clowes, and comprises several mosses, which are divided into two sections; first, those of which localities are given, viz., *Zygodon Mougeotii* B. & S., *Gymnostomum rupestre* Schwgr., *Ædipodium Griffithianum* Schwgr., *Diphyscium foliosum* W. & M., *Weissia denticulata* Brid., *W. tenuirostris* H. & T. [*Mollia tenuirostris* (H. & T.) Lindb.], *Grimmia spiralis* H. & T., *G. torta* Hsch., *Orthotrichum rupicola* Funck., *O. aristatum* Turn., Sm. (*O. diaphanum* Schrad.,

Bryum julaceum Sm., *B. Zierii* Dicks., *B. acuminatum* B. & S., *B. mnioides* Wils. (*Mnium subglobosum* B. & S.), *Hypnum flagellare* Dicks., *H. Crista-castrensis* L.; and secondly, other species mentioned as in the Windermere district, but without any exact stations:—*Bryum albicans* Brid., Hook., *B. alpinum*, Lin., *Anæctangium ciliatum* Hedw. (*Hedwigia ciliata* H.), *Anomodon curtispendus* H. & T., *Bartramia pomiformis* Hedw., *B. Halleriana* Hedw., *B. arcuata* Brid., *Hypnum brevirostre* Ehrh., *H. undulatum* (L.), *Neckera crispa* (L.), *Polytrichum alpinum* (L.), *P. urnigerum* (L.), *Trichostomum* (*Racomitrium*) *aciculare* W. & M., *T. canescens* Hedw., *T. fasciculare* Schrad., *T. lanuginosum* Hedw., *T. polyphyllum* (Dicks.).

1863. J. G. BAKER. North Yorkshire.

From Caldron Snout and Maize Beck, at the boundary between Westmorland and Yorkshire, Mr. Baker mentions *Andreæa Rothii* W. & M. (*A. rupestris* L.), *Blindia acuta* Hedw., *Grimmia torta* Hsch., *Racomitrium protensum* Al. Braun, *Zygodon Mougeotii* B. & S., *Diphyscium foliosum* W. & M., *Bryum crudum* Schreb., *B. alpinum* Linn., *B. Zierii* Dicks., *Fissidens osmundoides* Hedw., *Hypnum catenulatum* Schwgr., *Campylopus longipilus* Brid.; and from Hell Ghyll, another part of the boundary line between the same two counties, *Gymnostomum rupestre* Schwgr., and *Bartramia Oederi* Sw.

1887. C. H. BINSTED. The Naturalist, No. 140.

In the March number of The Naturalist, the Rev. C. H. Binstead announced half-a-dozen important additions to the Westmorland Moss Flora in the following species:—*Grimmia anodon* B. & S., *G. commutata* Hübn., *G. anomala* Hampe, *Bryum Muhlenbeckii* B. & S., *Cinclidium stygium* Swartz., *Hylocomium umbratum* Schreb.

In addition to the foregoing, it may be here mentioned that in Dr. Carrington's yet uncompleted British Hepaticæ, and in the ten parts of Dr. R. Braithwaite's British Moss Flora (1880-87), which comprise about half the acrocarpous mosses, several Westmorland stations are given.

This completes the literature on the subject, so far as has come under my notice. It now remains to indicate what other workers have been engaged in this field.

FUNGUS FORAY

AT BRAMHAM AND HAREWOOD PARKS.

THE closing meeting of the Yorkshire Naturalists' Union for 1888, held on Tuesday, the 25th of September, was organised as a Fungus Foray, and as such was a decided success in every way. Thanks to the very kind manner in which Lord Harewood and Mr. George Lane Fox allowed the day's investigations to be carried out on their respective estates, to the excellent and productive character of the ground thus made available, to the abundance of fungi, to the favourable character of the weather, and to the presence of Mr. George Massee, F.R.M.S., of the Royal Herbarium at Kew, who had accepted the Union's invitation to participate, and of a goodly number of the keenest and most assiduous of the very few Yorkshire botanists who study this group of plants, the excursions were both enjoyable and profitable. The meeting held at Leeds in the evening was well-attended, and the Show, which was open the same evening and following day, was nearly as extensive and quite as interesting as the very successful one laid out in Leeds in 1881, on the occasion of the first Fungus Foray ever held in Yorkshire.

Two parties were arranged for the excursion, starting in wagonettes from the Leeds Museum at 9 o'clock in the morning. The larger party went to Bramham, under the guidance of Mr. Massee; the smaller, to Harewood, under that of Mr. H. T. Soppitt, of Bradford. Mr. Massee was accompanied by the Rev. Wm. Fowler, M.A., Mr. W. Norwood Cheesman, Mr. Dewhirst, and other members, and was met at Bramham by Mr. Lane Fox, who took a kindly interest in the investigation, pointing out the most suitable woods on his estate, after ascertaining the requirements most looked for by a fungological party. This party collected about 124 species.

The party headed by Mr. Soppitt, who was accompanied by Messrs. W. West, F.L.S., A. Clarke, and others, was favoured by the assistance of two or three of Lord Harewood's keepers, whose local knowledge stood in good stead, and one of whom was of use in swarming a tree for a specimen of the Vegetable Beef-Steak. The ground investigated by Mr. Soppitt and his companions was varied as well as extensive, including most excellent fir-woods on Wigton Moor, and the splendid mixed woods (in which beech predominated) of Harewood Park itself. No list of the species observed on this route was kept at the time, but subsequent examination of results showed that, with a few interesting exceptions, the majority of the species were the same as those collected by the Bramham contingent.

By both parties were collected a very large quantity of fungi, and they returned to Leeds about five in the afternoon. Soon after this, all hands set to work to arrange and set out the specimens for the 'Show.' Thanks to the kindness of the Leeds Philosophical Society, the Show was arranged in their library, in which also the meeting was held.

At the meeting—over which the Rev. Wm. Fowler, M.A., an ex-president, presided—the minutes of the preceding meeting having been taken as read, and passed, Mr. Geo. Massee, F.R.M.S., was called upon to state the results of the day's work. Numerous species (over 200) had been collected, many of which (about forty) were new to the West Riding Flora, and others had not been seen therein since the time of James Bolton, about a century ago. Among the Hymenomycetes, white-spored species largely predominated, and the genera *Hygrophorus*, *Russula*, and *Lactarius* were especially abundant. On the other hand, several of the commonest of fungi (such as *Armillaria melleus*, *Hypholoma fascicularis*, etc.) were apparently absent or nearly so. Amongst the principal finds were *Lactarius aspidius* Fr. and *Russula cuprea*—a species included by Fries under *R. nitida*, from which it is readily distinguished by its copper-coloured pileus and rose-coloured stem—both new to Britain. Other species of note were *Lactarius aurantiacus* Fr., collected in quantity under fir-trees in Bramham Park, and recorded as British for the first time a few weeks previous when gathered in the New Forest; it is a really pretty species, with a deep-orange pileus and stem and decurrent gills, and has hitherto probably been confused with *L. mitissimus*; *Russula cærulea* Fr., *R. granulata* Cke., *R. expallens*, *Lactarius uvidus*, *Leotia lubrica*, *Hygrophorus hypothejus* Fr., *H. clarkii* Berk., *H. calyptræformis* Berk., *Dictydium cernuum*, and many other rare species. Later in the evening, Mr. Massee gave an interesting and racy address on the 'Evolution of Fungi,' which he treated in a humorous and masterly manner. Mr. C. P. Hobkirk, F.L.S., then proposed a vote of thanks to Lord Harewood, Mr. Lane Fox, Messrs. Massee, Soppitt, and all who had contributed to the success of the foray, which was unanimously adopted, as also was one to the chairman.

The Show, which was kept open the whole of the following day, proved of great interest to the visitors to the Museum, and was carefully examined by those members (not many, alas!) who take a real interest in the study. For the contribution of specimens to the Show the Union was indebted to various members and associates for specimens collected at other localities than those visited during the excursion. Mr. Rushforth, of Horbury, brought the Dry-rot (*Merulius*

lachrymans) from that place; Mr. Edgar R. Waite sent a large box of specimens from Goathland, amongst which were *Lycoperdon saccatum*, etc.; Mr. Lister, of Ovenden, brought *Boletus felleus* and several other species; Mr. R. Dewhirst brought *Hygrophorus cossus*, *Pluteus cervinus*, and *Peziza aurantia* from Saltaire; Mr. Soppitt's consignment included *Collybia distortus* and *Tricholoma albo-brunneus* from Esholt, and *Helvella lacunosa* from Heaton, near Bradford; and Mr. A. Clarke, of Huddersfield, brought a large number of specimens, including *Tricholoma brevipes*, *Marasmius epiphyllus*, etc., and to him the Union was much indebted for the use of a number of neatly-written labels of the names of species. The only regret is that for the Show there were not more fungologists of the first rank present. As it was, from shortness of time and abundance of material, Mr. Massee and his few assistants were more than fully employed, both on Tuesday evening and Wednesday morning, and it was simply impossible to keep a record of all the species in each consignment, as it is most desirable should be done.

The list of species exhibited at the Show, as far as can be ascertained, is as follows, species marked with * before name being new to the West Riding :—

HYMENOMYCETES.

AGARICINEAE.

- Agaricus** (*Amanita*) **phalloides** Fr. Bramham.
 „ (*Amanita*) **muscaria** L. Bramham. Harewood.
 „ (*Amanita*) **rubescens** P. Harewood.
 „ (*Amanita*) **mappa** Batsch. Bramham. Whitby (*G.M.*).
 „ (*Amanita*) **pantherinus** DC. Bramham. Harewood.
 „ (*Amanitopsis*) **vaginatus** Bull. Bramham. Harewd.
 „ * (*Lepiota*) **clypeolarius** Bull. Bramham.
 „ (*Lepiota*) **cristatus** L. Bramham.
 „ (*Lepiota*) **granulosus** Batsch. Bramham. Harewood.
 „ (*Lepiota*) **seminudus** Lasch. Bramham.
 „ * (*Lepiota*) **amianthinus** Scop. Bramham.
 „ (*Lepiota*) **carcharias** Pers. Bramham. Harewood.
 „ * (*Tricholoma*) **portentosus** Fr. Castle Howard (*G.M.*)
 „ (*Tricholoma*) **albo-brunneus** Pers. Bramham.
 „ Harewood. Esholt (*H. T. Soppitt*). Bulmer (*G.M.*).
 „ (*Tricholoma*) **rutilans** Schæff. Bramham. Harewood.
 „ (*Tricholoma*) **imbricatus** Fr. Bramham. Harewood.
 „ (*Tricholoma*) **terreus** Schæff. Bramham.
 „ (*Tricholoma*) **nudus** Bull. Harewood.
 „ (*Tricholoma*) **melaleucus** Pers.

- Agaricus (Tricholoma) brevipes** Bull. Huddersfield (*A. Clarke*).
 „ **(Clitocybe) nebularis** Batsch. Bramham.
 „ ***(Clitocybe) clavipes** Pers. Bramham.
 „ **(Clitocybe) odorus** Bull. Harewood.
 „ ***(Clitocybe) cerussatus** Fr. Bramham.
 „ **(Clitocybe) phyllophilus** Fr. Bramham. Harewood.
 „ **(Clitocybe) fumosus** Pers. Bramham. Harewood.
 „ **(Clitocybe) infundibuliformis** Schæff. Bramham.
 Harewood. Castle Howard (*Geo. Masee*).
 „ **(Clitocybe) brumalis** Fr. Bramham. Harewood.
 „ **(Clitocybe) fragrans** Sow. Harewood. Filey (*G.M.*).
 „ **(Laccaria) laccatus** Scop. Bramham. Harewood.
 „ **(Collybia) radicans** Relh. Bramham. Harewood.
 „ **(Collybia) maculatus** A. & S. Bramham. Harewood.
 „ **(Collybia) distortus** Fr. Bramham. Esholt (*H. T. Soppitt*).
 „ **(Collybia) butyraceus** Bull. Bramham. Harewood.
 „ **(Collybia) velutipes** Curt. Harewood.
 „ **(Collybia) confluens** Pers. Harewood.
 „ **(Collybia) tuberosus** Bull. Bramham. Harewood.
 „ **(Collybia) esculentus** Wulf.
 „ **(Collybia) dryophilus** Bull. Bramham. Harewood.
 „ **(Mycena) purus** Pers. Bramham. Harewood.
 „ ***(Mycena) gypseus** Fr. Bramham. Harewood.
 „ **(Mycena) galericulatus** Scop. Bramham. Harewood.
 „ **(Mycena) polygrammus** Bull. Harewood.
 „ **(Mycena) alcalinus** Fr. Bramham.
 „ **(Mycena) filipes** Bull. Bramham.
 „ **(Mycena) sanguinolentus** A. & S. Bramham.
 Harewood.
 „ **(Mycena) galopus** Pers. Bramham. Harewood.
 „ **(Mycena) epipterygius** Scop. Bramham. Harewood.
 „ **(Mycena) stylobates** Pers. Harewood.
 „ **(Omphalia) campanella** Batsch. Harewood.
 „ ***(Pleurotus) limpidus** Fr. Bramham.
 „ **(Pluteus) cervinus** Schæff. Bramham. Harewood.
 Saltaire (*R. Dewhurst*).
 „ ***(Pluteus) nanus** Pers. Bramham.
 „ ***(Entoloma) fertilis** Berk. Bramham.
 „ **(Entoloma) jubatus** Fr. Bramham. Harewood.
 „ **(Entoloma) costatus** Fr. Harewood.
 „ **(Entoloma) sericeus** Bull. Harewood.
 „ ***(Entoloma) nidorosus** Fr. Bramham.

- **Agaricus* (*Clitopilus*) *cancrinus* Fr. Bramham.
 „ *(*Leptonia*) *lampropus* Fr. Harewood.
 „ (*Claudopus*) *variabilis* Pers. Bramham.
 „ *(*Claudopus*) *byssisedus* Pers. Bramham.
 „ (*Pholiota*) *spectabilis* Fr. Bramham. Harewood.
 „ (*Pholiota*) *squarrosus* Mull. Harewood.
 „ (*Inocybe*) *scaber* Mull. Bramham.
 „ (*Inocybe*) *rimosus* Bull. Bramham.
 „ *(*Inocybe*) *asterosporus* Quel. Bramham. Harewood.
 „ (*Inocybe*) *geophyllus* Sow. Bramham. Harewood.
 „ (*Hebeloma*) *fastibilis* Fr. Bramham.
 „ *(*Hebeloma*) *glutinosus* Lindgr. Harewood.
 „ *(*Hebeloma*) *mesophæus* Fr. Bramham.
 „ (*Hebeloma*) *crustuliniformis* Bull. Bramham.
 „ *(*Flammula*) *lentus* Pers. Harewood.
 „ (*Flammula*) *carbonarius* Fr. Bramham.
 „ (*Flammula*) *sapineus* Fr. Bramham.
 „ (*Naucoria*) *melinoides* Fr. Bramham.
 „ (*Galera*) *hypnorum* Batsch. Harewood.
 Var. *sphagnorum*. Bramham.
 „ (*Tubaria*) *furfuraceus* Pers. Harewood.
 „ (*Stropharia*) *æruginosus* Curt. Bramham. Harewd.
 „ (*Stropharia*) *squamosus* Fr. Harewood.
 „ *(*Stropharia*) *thraustus* Kalehb. Bramham.
 „ (*Stropharia*) *semiglobatus* Batsch. Harewood.
 „ (*Hypholoma*) *sublateritius* Schæff. Harewood.
 „ (*Hypholoma*) *capnoides* Fr. Bramham.
 „ (*Hypholoma*) *velutinus* Pers. Harewood.
 „ (*Psilocybe*) *semilanceatus* Fr. Bramham. Harewd.
 „ (*Psilocybe*) *spadiceus* Fr. Bramham.
 „ (*Psilocybe*) *hydrophilus* Bull. Harewood.
 „ (*Psathyra*) *corrugis* Pers. Bramham.
 „ (*Panæolus*) *separatus* L. Bramham. Harewood.
 „ (*Panæolus*) *campanulatus* L. Harewood.
 „ (*Psathyrella*) *atomatus* Fr. Bramham. Harewood.
Coprinus atramentarius Fr. Harewood.
 „ *micaceus* Fr. Harewood.
 „ *plicatilis* Fr. Bramham. Harewood.
Cortinarius (*Phlegmacium*) *cærulescens* Fr. Bramham.
 Harewood.
 „ *(*Dermocybe*) *ochroleucus* Fr. Bramham.
 „ *(*Dermocybe*) *caninus* Fr. Bramham. Harewood.
 „ *(*Hydrocybe*) *paleaceus* Fr. Bramham.

- Cortinarius (Hydrocybe) acutus** Fr. Bramham. Harewood.
Paxillus involutus Fr. Bramham. Harewood.
 „ ***leptopus** Fr. Harewood.
Hygrophorus eburneus Fr. Bramham.
 „ **cossus** Fr. Bramham. Saltaire (*R. Dewhirst*).
 „ **hypothejus** Fr. Harewood.
 „ **pratensis** Fr. Bramham. Harewood.
 „ **virgineus** Fr. Bramham. Harewood.
 „ ***clarkii** Berk. Harewood.
 „ **lactus** Berk. Harewood.
 „ **coccineus** Fr. Bramham. Harewood.
 „ **ceraceus** Fr. Harewood.
 „ **puniceus** Fr. Bramham.
 „ **conicus** Fr. Harewood.
 „ ***calyptræformis** Berk. Harewood.
 „ **psittacinus** Fr. Bramham. Harewood.
 „ **unguinus** Fr. Harewood.
Lactarius turpis Fr. Bramham. Harewood.
 „ ***aspideus** Fr. Harewood.
 „ **blennius** Fr. Bramham. Harewood.
 „ ***flexuosus** Fr. Harewood.
 „ **deliciosus** Fr. Bramham.
 „ **quietus** Fr. Bramham. Harewood.
 „ ***aurantiacus** Fr. Bramham.
 „ **rufus** Fr. Bramham. Harewood.
 „ **glyciosmus** Fr. Harewood.
 „ **mitissimus** Fr. Bramham.
 „ **subdulcis** Fr. Bramham. Harewood.
 „ **uvidus** Fr. Bramham.
Russula nigricans Fr. Bramham. Harewood.
 „ ***densifolia** Seer. Bramham.
 „ **depallens** Fr. Harewood.
 „ ***cærulea** Fr. Bramham.
 „ ***lepida** Fr. Bramham. Harewood.
 „ **rubra** Fr. Bramham.
 „ **cyanoxantha** Fr. Bramham.
 „ **fellea** Fr. Bramham. Harewood.
 „ ***granulata** Cke. Bramham. Harewood.
 „ **emetica** Fr. Bramham. Harewood.
 „ **ochroleuca** Fr. Bramham.
 „ **fragilis** Fr. Bramham. Harewood.
 „ ***expallens** Gillet. Bramham.
 „ ***cuprea** Krombh. Bramham.

- **Russula puellaris* Fr. Harewood.
 „ *lutea* Fr. Bramham.
Cantharellus cibarius Fr. Bramham.
 „ *cinereus* Fr.
Marasmius peronatus Fr. Bramham. Harewood.
 „ **terginus* Fr. Bramham.
 „ *erythropus* Fr. Harewood.
 „ *ramealis* Fr. Harewood.
 „ *androsaceus* Fr. Harewood.
 „ *rotula* Fr. Harewood.
 „ *epiphyllus* Fr. Bramham. Harewood. Hudders-
 field (*A. Clarke*).
Panus stypticus Fr. Bramham. Harewood.

POLYPOREÆ.

- Boletus flavus* With. Bramham. Harewood.
 „ *felleus* Bull. Ovenden (*Mr. Lister*).
 „ *badius* Fr. Bramham. Harewood.
 „ *chrysenteron* Fr. Bramham. Harewood.
 „ *scaber* Fr. Bramham.
 „ *edulis* Fr. Harewood.
 „ *versipellis* Fr. Harewood.
Fistulina hepatica Fr. Bramham. Harewood.
Polyporus intybaceus Fr. Bramham.
 „ *chioneus* Fr. Bramham. Harewood.
 „ *adustus* Fr. Bramham. Harewood.
 „ *betulinus* Fr. Bramham. Harewood.
 „ *annosus* Fr. Bramham. Harewood.
 „ *versicolor* Fr. Bramham. Harewood.
 „ *vaporarius* Fr. Bramham. Harewood.
Merulius lacrymans Fr. Bramham. Horbury (*W. Rushforth*).

HYDNEÆ.

- Hydnum repandum* L. Bramham. Harewood.

THELEPHOREÆ.

- Thelephora laciniata* Pers. Bramham. Harewood.
Stereum hirsutum Fr. Bramham. Harewood.
 **Hymenochæte tabacina* Fr. Bramham. Harewood.
Peniophora quercina Fr. Harewood.
 „ **velutina* Fr. Bramham.
 **Corticium comedens* Fr. Bramham.
Clavaria cinerea Bull. Bramham. Harewood.
 „ *rugosa* Bull. Bramham. Harewood.

- Clavaria inæqualis* Fl.Dan. Bramham.
 „ *fragilis* Holmsk. Bramham. Harewood.
 „ *argillacea* Fr. Harewood.
Calocera viscosa Fr. Bramham. Harewood.

TREMELLEÆ.

- Tremella mesenterica* Retz. Harewood.
Dacrymyces chrysocomus Tul. Bramham.

GASTROMYCETES.

PHALLOIDEÆ.

- Ithyphallus impudicus* L. Bramham. Harewood.
Mutinus caninus Fr. Harewood.

LYCOPERDEÆ.

- Lycoperdon saccatum* Vahl. Bramham. Goathland (*E.R. Waite*).
 „ **perlatum* Fr. Bramham.
 „ *pyriforme* Schæff. Bramham.
Scleroderma vulgare Fr. Bramham. Harewood.

ASCOMYCETES.

HELVELLEÆ.

- Helvella crispa* Fr.
 „ *elastica* Bull.
 „ *lacunosa* Afz. Heaton, near Bradford (*H. T. Soppitt*).
Leotia lubrica P.

PEZIZEÆ.

- Peziza vesiculosa* Bull. Bramham.
 „ *aurantia* Céd. Saltaire (*R. Dewhirst*). Esholt (*H. T. Soppitt*)
 „ **carbonaria* A. & S. Bramham.
 „ **omphalodes* Bull. Bramham.
Lachnea scutellata L. Bramham.

XYLARIÆÆ.

- Xylaria polymorpha* Grev. Bramham.
 „ *hypoxylon* Grev. Harewood.

MYCETOZOA.

- *Dictydium cernuum* P. Bramham.

The results of the foray may be tabulated as follows:—
 Species collected and determined, 202 ; species new to the British
 flora, 2 ; species new to the West Riding flora, 42.

The Fungus Foray of 1888, as a whole, may be regarded as highly successful, and it is to be hoped that it will give as much impetus to the study of fungi in Yorkshire as was given by that held in 1881. The foray of that year was the first ever held in the county, and it can be truly said that the seven years intervening between it and the one now chronicled have witnessed more practical work than had been done since the day of James Bolton, the author of 'The Fungusses of Halifax,' now about a century ago. We do not know how many fungusses Bolton collected, but the Yorkshire list which Mr. Massee contributed to the 'Transactions of the Yorkshire Naturalists' Union' after the foray of 1881, included 318 species, while for the West Riding alone the number cited in Lees' 'Flora of West Yorkshire,' published 1888, is 1,009, to which forty-one are added as the result of the Foray of 1888. May it not be so many years before the third Yorkshire Foray is held, and may it be even more successful than its two predecessors of 1881 and 1888!

NOTE—FUNGI.

Æcidium calthæ Grev. near Kendal.—This cluster-cap, which seems to be very local, and which I have often sought for in vain, was growing in abundance on one spot on the side of Benson Knot near Kendal, in June of this year, on the leaves of *Caltha palustris*. It was interesting, from its bearing on the theory of dimorphism, to find *Puccinea calthæ* Lk. (also rather a rare fungus) growing on the same plants in September.—C. H. WADDELL, Whitewell, Belfast, Oct. 25th.

NOTE—COLEOPTERA.

Coleoptera at Market Weighton, August 6th, 1888.—As a supplement to the report in last month's *Naturalist*, I may remark that amongst other captures were *Oxyporus rufus* and *Mycetophagus quadripustulatus*. One very noticeable thing was the absence of Geodephaga, for, excepting a few *Amaræ*, *Calathus cisteloides*, and *C. melanocephalus*, I saw none.—E. G. BAYFORD, West Melton near Rotherham, September 12th, 1888.

NOTE—ARACHNIDA.

Lincolnshire Spiders.—The following three spiders, my specimens of which have been kindly examined by the Rev. O. Pickard-Cambridge, are additions to the list of spiders obtained in the county of Lincoln, published at pp. 55-59 of *The Naturalist* for 1887:—

Argyroneta aquatica Bl. Two observed in a drain by Monk's House Lane, near Spalding, and another found running upon the beach at Mablethorpe, the latter having, doubtless, been washed down from the marsh-drains. August 1888.

Linyphia vivax Bl. Taken in an out-building at 7, Lee Street, Louth, April 1887.

Lycosa palustris L. Cleethorpes, April 1887.

While in Lincolnshire in August last, I found the beautiful *Epeira scalaris* in Bourn Woods, in the south of the county; and in several places in the marshes, and near Gosberton in the fens, observed *Epeira cornuta* numerous by the drain-sides. Near Wragby, three of the dome-shaped webs containing the young of *Ocyale mirabilis* were noticed. Two of these were upon low herbage, while the third was amongst furze fully eighteen inches from the ground. In each case the adult spider was near the web, and one was observed to have a *Tipula* within its grasp.—H. WALLIS KEW, London, 8th October, 1888.

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NOTES—ORNITHOLOGY.

Crossbills (*Loxia curvirostra* and *L. pityopsittacus*) on the East Coast of England.—Besides the Crossbills which you have recorded, two were taken the last week in July at the Outer Dowsing Lightship, which is far out to sea, and almost in the same line of latitude as the Humber mouth. They were brought alive by a sailor into Yarmouth, and taken to Mr. G. Smith. In April two Parrot Crossbills were shot near Norwich. Mr. Gunn and I compared their beaks with the common species, and were satisfied that they were typical examples of this form, which has only once occurred before.—J. H. GURNEY, Jun., Keswick Hall, Norwich, September 11th, 1888.

Purple Heron in West Yorkshire.—On the 20th of April last I examined, in the flesh, a fine mature male specimen of *Ardea purpurea* Linn., which had been obtained the previous day on the margins of Farnley Pool, near Otley. When first seen, the bird was approaching the water from the direction of Harewood. It appears to have been quite unsuspicious of danger, and allowed a keeper to approach within gun-range, and this in quite an exposed situation, where the bird was shot for a Common Heron (*Ardea cinerea*). This specimen makes the seventh occurrence known to me for Yorkshire of a bird which has occurred chiefly in the spring and summer in the county. The bird is now, I believe, in the possession of the Rev. F. Fawkes, of Rothwell.—WM. EAGLE CLARKE.

Black Guillemot near Whitby.—On the 30th August, a Guillemot was shot off Sandsend. It is splashed black and white from the beak, all the underside to the tail, also round the head and neck to the shoulder; the back black, with slight splashings here and there; each wing has two white bars, and the legs and feet are a beautiful red. Can you say what it is?—T. STEPHENSON, Whitby, Sep. 13th.

[There can be little doubt that the bird above described is an adult Black Guillemot (*Uria grylle*), in the transition stage of plumage between summer and winter. The species is a casual visitant on the Yorkshire coast during the autumn and spring.—W.E.C.]

Reed Warbler nesting in the Washburn Valley.—On July 5th I found the nest of the Reed Warbler (*Acrocephalus streperus*), with young ready to fly, on the bank of one of the reservoirs. The nest was in mowing-grass, supported by long stems, which were woven in its structure. This is, I believe, the first note of the nesting of the bird in the above-named locality.—H. KNIGHT HORSFIELD.

Flamborough Bird-notes.—The late storms have brought several of our summer migrants down to the Headland, where they generally stop a few days to take rest before leaving our shores. Several young Cuckoos (*Cuculus canorus*), Nightjars (*Caprimulgus europæus*), Wagtails, Redstarts (*Ruticilla phæniceus*), and Wheatears (*Saxicola ænanthe*), have arrived, ready to book (to use the late Frank Buckland's metaphor, who represents Flamborough Head as a railway station for birds coming and going) for some other place, probably far remote.—MATTHEW BAILEY, Flamborough, September 11th, 1888.

Robin caught in a Mouse-trap.—On visiting my traps, which were set for Red Field Voles amongst a small plot of swede turnips, I was much surprised to find in one of them a Robin (*Erithacus rubecula*), which was caught by the head, and killed, as a mouse would be. The traps used were the common spring ones, set with thread, and which are struck, as soon as the thread is bitten through, death being caused by strangulation. The one in question, however, was set by means of a spring instead of thread, but made on the same principle; it was baited with oatmeal. The Robin, after releasing the spring, to obtain the bait, had evidently, in its struggles, upturned the trap, which remained in such a position that the bird could not reach the ground with its feet, and was thus quite helpless, being held by its neck, with its body in a perpendicular position.—BASIL CARTER, Burton House, Masham, October 9th, 1888.

NOTES—BOTANY.

Silene nutans still at Knaresborough.—This plant is by no means extinct in its old habitat at Knaresborough, but quite abundant. I saw any quantity of it this year, last year, and the year before.—W. C. HEY, St. Olave's Vicarage, York, October 9th, 1888.

Stratiotes aloides at Carlton near Selby.—On the 11th October inst. I found in a pond near Carlton, Selby, a number of specimens of the Water Soldier (*Stratiotes aloides*). I believe this plant has not been recorded previously in the district of the Aire. In the same pond were growing *Hydrocharis morsus-ranae*, *Sium latifolium*, *Iris*, and *Rumex hydrolapathum*.—THOMAS BUNKER, Goole, October 13th, 1888.

Notes on Settle Plants.—I observe that Mr. Whitwell puts words into my mouth which I did not and could not use. May I assure him that I did not throw doubt on the presence of *A. lonchitis* in the Settle district, or on Mr. Tatham's record for the same. My words were:—‘I have seen nothing like the true plant near Settle, and forms of ‘*aculeatum*’ are often confounded with it; it is more likely to be on Ingleborough, Penyghent, etc., than at a lower elevation. No record for this plant ought to pass unless the specimen is in good fructification.’ These words are the words of caution and of my personal experience—they are not the words of doubt.—A. CRAIG CHRISTIE.

NOTES—LEPIDOPTERA.

Scopula ferrugalis at Huddersfield.—I took a specimen of *Scopula ferrugalis* at Grimescar Wood near here on the 31st of August last. The species is quite new to this district; the only other Yorkshire localities for it are Scarborough and Harrogate.—G. W. K. CROSLAND, Holmfild, Huddersfield, Sep. 7th, 1888.

Euperia fulvago and Acronycta alni near Doncaster.—Recently, Mr. J. N. Young, of Rotherham, sent me a pair of *Euperia fulvago*, part of twenty-six specimens which Mr. Young and his friends have secured in Wadworth Wood, near Doncaster, this season. Except in Sherwood Forest, where the species is abundant, *E. fulvago* has always been considered rare in Britain, and the only two previously recorded Yorkshire captures are—one by Mr. Harrison at Barnsley in 1875, and one by Mr. Prest at Doncaster in 1881. In Wadworth Wood also, Mr. Young's son beat out of aspen on September 8th, a larva of *Acronycta alni*; the food is rather unusual for this species. In the same wood, *Lobophora hexapterata* was unusually abundant earlier in the season.—GEORGE T. PORRITT, Huddersfield, October 6th, 1888.

NOTE—MAMMALIA.

Whales off Flamborough.—For several days some scores of large Whales, which I believe to be Finners, have visited our shores. They go in shoals, and, to all appearance, should any obstacle come in their way, they would tear it limb from limb, so monstrous and wild-looking, jumping and plunging for yards, going at the rate of about eight miles an hour. The crew of one of our crab-boats (so the men inform me, working their crab-pots) being afraid of them, having had to make all the noise they possibly could to keep them off from molesting the boat. Two very large codfish were picked up near the North Smithwick Buoy, having been killed by those sea-monsters.—MATTHEW BAILEY, Flamborough, Sep. 17th, 1888.

[We submitted the above note to Mr. Thomas Southwell, who is inclined to think that the Whales are some species of *Balenoptera*, which are probably attracted by the presence of Herring or Whiting off the coast, and that they are not likely to display any viciousness, being of a very timid disposition, unless wounded. They might, certainly, come in contact with the boat accidentally, but that is not very probable.—EDS.]

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THE YORKSHIRE BOULDER COMMITTEE AND ITS SECOND YEAR'S WORK.

S. A. ADAMSON, F.G.S.,
Hon. Secretary to the Committee.

THIS Committee has again received, and, after careful examination, approved of, a large number of reports upon the Erratic Blocks of Yorkshire. These have been duly forwarded and presented, through Dr. Crosskey, to the Geological Section of the British Association at the recent meeting at Bath. They were warmly received and acknowledged to be valuable contributions to our glacial history. The feeling was expressed, as heretofore, that Yorkshire still showed a splendid example in the method and exactitude of the observations presented, and also still afforded a type for laudable emulation on the part of other counties. The Boulder Map of Yorkshire, whereon are placed the true positions of the various erratics reported, was on view before the members of the Geological Section. The opinion was likewise expressed, that considering the large number of returns sent in and approved of, some classification of the same should be made: this, in due time, the Committee will certainly attend to. The Committee would again most warmly thank those valued contributors and observers who have accomplished such valuable work, and would impress upon them the necessity of the continuance of their efforts, so that the glacial survey of Yorkshire may be an exhaustive one. And, whilst specially acknowledging the efforts of the geologists of the North and East Ridings of Yorkshire (evidence of which the detailed reports will show) they would also ask that their friends in the West Riding should emulate this example and supply the information so much needed with respect to this important part of the county. The Committee desire to place upon record the personal and self-denying efforts which their eminent chairman, Prof. Green, F.R.S. (now Professor of Geology at the University of Oxford), has unremittingly made to further their work. They also wish to embody in this report the following resolution passed at a recent meeting of the Committee: "That we sincerely congratulate our chairman, Prof. Green, F.R.S., upon his well-deserved promotion to the illustrious position of Professor of Geology at the University of Oxford, and trust that his health may long permit him to adorn that post, although at the same time we are only too conscious of the personal loss to ourselves and to Yorkshire geology by his approaching

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removal." The Committee also express their poignant regret at the untimely decease of Prof. H. Carvill Lewis, who entered with such enthusiasm and success into glacial investigations connected with this country, and who, at the Manchester meeting of the British Association, expressed his high opinion of the work of the Yorkshire Boulder Committee, looking forward, as he then said, to much practical co-operation with them.

Speaking upon coming work, many reports are already in hand for consideration, and the Committee desire to emphasise their request that all unreported examples of erratic blocks in this county may be duly scheduled, for which purpose the hon. secretary (Mr. Adamson, F.G.S., 52, Wellclose Terrace, Leeds) will gladly supply the requisite form of schedule, or give any information upon the work of the Committee and the results they desire. The details of reports received and examined are now presented.

REPORTS UPON ERRATICS IN NORTH AND EAST RIDINGS OF YORKSHIRE.

REV. E. MAULE COLE, M.A.,

Wetwang; President of the Geological Section of the Yorkshire Naturalists' Union.

Stillington, near Easingwold	...	...	North Riding.
Gristhorpe, near Filey	...	...	" "
Filey Brigg	...	...	" "
Muston, near Filey	...	...	East "
Bempton	...	...	" "
Bempton and Buckton	...	...	" "

STILLINGTON, NEAR EASINGWOLD (NORTH RIDING).

In the North Skeugh Field, Stillington near Easingwold, is a boulder, 4 ft. 3 in. \times 3 ft. \times 2 ft. 7 in.; rounded; has not been moved; longest axis N.E. and S.W. No striæ apparent; a very hard Cherty Limestone; about 150 ft. above sea-level. Rests upon Middle Lias.

GRISTHORPE, NEAR FILEY (NORTH RIDING).

In a field about 350 yards north of Gristhorpe Station, and about 50 yds. east of the railway, is an isolated boulder of Basalt. Sub-angular; 4 ft. 7 in. \times 2 ft. 10 in. \times 1 ft. 11 in. Partially embedded in the ground.

CARR NAZE, FILEY BRIGG (NORTH RIDING).

1. Rounded block on surface of third field from Filey Church, due north, near cliff; 2 ft. 7 in. \times 2 ft. 5 in. \times 1 ft. 5 in. Whinstone.

2. A similar but flatter block, lying at *base* of Boulder Clay, partially exposed, on North side of Naze, just above Oolitic rocks; 2 ft. 11 in. \times 2 ft. 8 in. \times 1 ft. 2 in.; direction E.N.E. Beautifully furrowed with ice-marks. Whinstone.

3. A mass, lying exposed on Oolitic rocks, about 50 ft. above sea-level, evidently washed out of Boulder Clay above; 3 ft. 8 in. \times 2 ft. \times 1 ft. 4 in.; smooth edges, flat surface. Mica-Trip.

4. Small block, on ledge, fallen as above. Quartz-Felsite.

5. In Boulder Clay, on S. side of the Naze. Black earthy Limestone, with Iron-Pyrites.

6. Fine mass of Lias, with Lower Lias fossils (*Gryphæa*, *Mya*, etc.) 1 ft. \times 1 ft. 5 in. \times 7 in. Washed out of Boulder Clay on N. side of the Naze.

7. Mass of Freestone, lying partially exposed, half-way up N. face of Boulder Clay at Carr Naze; 3 ft. 10 in. \times 2 ft. 4 in. \times 1 ft.; direction N.; no markings.

MUSTON, NEAR FILEY (EAST RIDING).

In and around the village of Muston are the following boulders:

No. 1.	3 ft. \times 2 ft. \times 1½ ft.	Basalt.	Smoothed.
„ 2.	1 ft. 3 in. \times 1 ft. 9 in. \times 1 ft. 6 in.	„	Sharp edges.
„ 3.	2 ft. \times 3 ft. \times 1 ft. 8 in.	„	Smoothed.
„ 4.	4 ft. 5 in. \times 1 ft. 10 in. \times 2 ft.	„	Triangular-shaped end.
„ 5.	3 ft. \times 2 ft. 4 in. \times 1 ft. 8 in.	„	Angular.
„ 6.	1 ft. 8 in. \times 2 ft. 6 in. \times 2 ft. 11 in.	„	Smoothed on one side.
„ 7.	4 ft. 6 in. \times 1 ft. 7 in. \times 1 ft. 3 in.	Grit.	

Round the sign-post in the centre of Muston village are two boulders. Basalt; 2 ft. 7 in. \times 2 ft. 3 in. \times 8 in. (embedded in ground), and 2 ft. 9 in. \times 2 ft. (embedded in ground).

A boulder at the corner of a house close by. Basalt; 2 ft. 3 in. \times 1 ft. 8 in. \times 9 in.

There are at least half-a-dozen others from 1 ft. to 2 ft. cubes.

In a bank surmounted by a hedge, at the Hunmanby end of the village, are three Gritstone boulders; 3 ft. 3 in. \times 1 ft. 8 in. \times 1 ft. 1 in.; 2 ft. 7 in. \times 1 ft. 8 in.; 3 ft. \times 1 ft. 5 in.

In the middle of a grass field, halfway between Muston and Hunmanby in a straight line, is an isolated boulder of Basalt; rounded; 3 ft. 6 in. \times 3 ft. \times 1 ft. 1½ in. Embedded in the ground.

BEMPTON (EAST RIDING).

At Bempton, in the fields known as the 'Leys,' a few yards from the top of Bempton Cliffs, opposite Scale Nab, are two boulders, which are about 50 yds. apart.

1. 4 ft. \times 3 ft. \times 1 ft. 6 in. Sub-angular. Longest axis, North, inclined to West. Whinstone. Above sea-level 275 ft. Isolated. Rests upon thin Boulder Clay, underlaid by Chalk.

2. 4 ft. \times 4 ft. \times 1 ft. 6 in. Sub-angular. Longest axis, North, inclined to West. Whinstone. Above sea-level 280 ft. Isolated. Rests upon thin Boulder Clay, underlaid by Chalk.

BEMPTON AND BUCKTON (EAST RIDING).

At Bempton and Buckton. 3 ft. \times 2 ft. and 2 ft. cube is the ordinary shape; a few angular, a few sub-angular, but mostly rounded. The ones referred to have all been moved by man; built into foundations of houses; set up at corners of streets; also used as seats. There is no doubt whatever the boulders have been removed from adjacent fields. By far the greater number are Whinstone; there are many blocks of various Sandstones, but four-fifths are Whinstone. They are about 250 ft. above sea-level.

They are abundant in the villages of Bempton and Buckton—speaking only of the large ones: five may be seen at the well; ten at the pond close by; ten more in the cottages towards Cliff Lane; five forming steps in the lane itself; hundreds in the walls, of smaller size, but upwards of 1 ft. cube; ten in Buckton, upwards of 2 ft.; fifteen at least in Old Bridlington, at the corners of streets, upwards of 2 ft., some smoothed; twenty-four by the pond at Flamborough, removed thither from adjacent fields. *All* the above-mentioned are Whinstone; it is the characteristic boulder of the Buckton, Bempton, and Flamborough Cliffs, and seems ubiquitous.

REPORTS UPON ERRATICS IN NORTH AND EAST RIDINGS OF YORKSHIRE.

SAMUEL CHADWICK,

Malton; Joint Geological Secretary to Yorkshire Naturalists' Union.

No. 1.	Cropton, near Pickering	...	North Riding.
„ 2.	Neswick, „ Driffeld	...	East „
„ 3.	Grosmont „ Whitby	...	North „
„ 4.	Sleights „ „	...	„ „
„ 5.	Kirkby Underdale	...	East „
Nos. 6 to 9.	Speeton, near Filey	...	„ „
„ 10 to 15.	Hunmanby, „ „	...	„ „
„ 16 to 18.	Reighton „ „	...	„ „
„ 19 to 29.	Cayton „ Scarborough	...	North „
„ 30 to 34.	Lebberston, „ „	...	„ „
No. 35.	Filey (near)	...	„ „
„ 36.	Gristhorpe, near Scarborough	...	„ „
„ 37.	Seamer „ „	...	„ „

1.—CROPTON, NEAR PICKERING.

In the parish of Cropton, four miles from Pickering, North Riding, and in a grass field belonging to Mr. James Dixon, Loand House Farm; 3 ft. 4 in. \times 2 ft. 5 in. \times 1 ft. 10 in. out of ground. Rounded, but attempts have been made to break it. Its longest axis is nearly E. to W. Sandstone, approaching Quartzite, not unlike some of the Yoredale Sandstones of the Yorkshire dales; about 200 ft. above sea-level, but considerably below Cropton village. There are several small boulders near, and it rests upon fine loamy soil.

2.—NESWICK, NEAR DRIFFIELD.

On the farm occupied by Mr. Grundon (estate of Mr. J. R. Grimston), Neswick, south-west of Driffield; at present 4 ft. \times 2 ft. 6 in. \times 1 ft. 3 in., but some portion has been broken away. Sub-angular. Not moved by man; is long shaped, longest axis E. and W. Whinstone; 250 ft. above sea-level; isolated, and is upon Boulder Clay resting upon Chalk.

3.—GROSMONT, NEAR WHITBY.

Grosmont, near Whitby, on the estate of Messrs. Bagnall, Grosmont Iron Works; 2 ft. 3 in. \times 1 ft. 10 in. \times 2 ft. Well rounded; has been moved; no striæ or groovings. Shap Fell Granite; about 100 ft. above sea-level. Was originally found in the bed of the river Esk, which is 300 yds. E. of the railway station, and the boulder was found about 50 yds. to the N. of the first railway bridge crossing the stream. The boulder rests upon the Alum Shales of the Lias, through which the river Esk cuts its way.

4.—SLEIGHTS, NEAR WHITBY.

Sleights, near Whitby, on the Sleights Hall estate, about 300 yds. W. of Sleights Railway Station, and on the E. side of the river Esk; 2 ft. \times 1 ft. 6 in. \times 1 ft. 6 in. out of ground. Sub-angular; rather long shaped, but has been moved; no striæ or groovings. Granite; 100 ft. above sea-level. Was originally in a small bed of gravel, which rests upon the Lias Alum Shale, cut through at the making of the railway.

5.—KIRKBY UNDERDALE.

In a grass field, three-quarters of a mile due E. from Kirkby Underdale and half a mile S. of Uncleby are two boulders:—No. 1 is 5 ft. \times 3 ft. 6 in. \times 1 ft. 3 in.; angular; longest axis, N. and S. No. 2 is 6 ft. 3 in. \times 3 ft. \times 2 ft. 6 in. above ground; sub-angular; longest axis, direct N. and S.

These are both composed of Ferruginous Oolitic Limestone (Inferior Oolite), resting upon the Red Chalk; no striæ or groovings are visible upon *exposed* surfaces; are about 300 ft. above sea-level.

6, 7, 8, 9.—SPEETON, NEAR FILEY.

6. On Mr. Wilson's farm, in a field, and going from the high road to the house, is a boulder, 2 ft. 9 in. \times 2 ft. 9 in. \times 2 ft. Nearly a square, angular block. Whinstone; about 350 ft. above sea-level. Is isolated. Rests on Boulder Clay.

7. In a field near the mill belonging to Mr. Plews is a boulder, 3 ft. 7 in. \times 1 ft. 3 in. \times 1 ft. 3 in. Oblong, rounded at each end; no striæ or groovings observed. Whinstone; about 350 ft. above sea-level. Rests on Boulder Clay, with Chalk underlying.

8. At the corner of Mr. Wilson's garden are three boulders:—

- | | | | | |
|--------|-------------|----------------------|----------------|--------------|
| No. 1. | 1 ft. 6 in. | \times 1 ft. 6 in. | \times 1 ft. | Angular. |
| „ 2. | 3 ft. | \times 1 ft. 6 in. | \times 1 ft. | Rounded. |
| „ 3. | 3 ft. | \times 2 ft. | \times 2 ft. | Sub-angular. |

No striæ or groovings observed. All are Whinstone; about 350 ft. above sea-level. Rest on Boulder Clay, with Chalk underlying.

9. In the village road leading from the high road are twenty-three boulders, the three largest being of the following dimensions:—

- | | | | | |
|--------|-------------|----------------------|----------------------|--------------------------------------|
| No. 1. | 2 ft. | \times 1 ft. 2 in. | \times 1 ft. 2 in. | } Irregularly shaped
and angular. |
| „ 2. | 1 ft. 6 in. | \times 1 ft. | \times 1 ft. | |
| „ 3. | 1 ft. 2 in. | \times 1 ft. 2 in. | \times 1 ft. | |

The majority are Whinstone, the remainder fine Sandstone; about 350 ft. above sea-level.

NOTE.—In various parts of the village Whinstone boulders may be found, some rounded, others angular. The average size about 1 ft. 3 in. \times 1 ft. Many of them have been moved, and are now used for support of stacks and other purposes.

10, 11, 12.—HUNMANBY.

10. On the farm known as 'Airy Hill,' occupied by Mr. Woodcock, are several boulders in front of the house, which have been collected from adjacent fields.

There are five composed of Whinstone, varying in size from 2 ft. 10 in. \times 1 ft. 10 in. \times 1 ft. 4 in. to 1 ft. 6 in. \times 1 ft. 6 in. \times 1 ft.

There are also three of Shap Granite, and one of Grey Granite, the largest being 2 ft. 3 in. \times 2 ft. 2 in. \times 11 in. They are rounded to sub-angular. The surface in this district undulates, and any sections are through Boulder Clay.

11. On the Glenton Farm, on W. side of road leading from Reighton to Filey are two boulders:—1 ft. 7 in. \times 1 ft. 7 in. \times 1 ft.; Grey Granite; rounded. 3 ft. \times 2 ft. 10 in. \times 2 ft.; Mountain Limestone; rounded. No striæ or groovings. Have doubtless been taken from an adjacent ridge of gravel which runs nearly N. and S.

12. On Col. Mitford's estate and on a farm occupied by Mr. Hornby, $1\frac{1}{2}$ miles E. of Hunmanby and $3\frac{1}{2}$ miles S. of Filey, are two boulders, 1 ft. $3\frac{1}{2}$ in. \times 1 ft. \times 9 in.; 1 ft. 10 in. \times 1 ft. 5 in. \times 7 in. Both are hard fine-grained Sandstones, and have been removed from adjacent land. They originally rested upon the top of a bank close to the cliff.

All the above are from 150 to 200 ft. above sea-level.

13, 14, 15. — HUNMANBY.

ISOLATED BOULDERS.

13. On a farm known as 'Airy Hill,' occupied by Mr. Woodcock, about 1 mile E. of Hunmanby and $2\frac{1}{2}$ miles S. of Filey. 2 ft. 4 in. \times 2 ft. 2 in. \times 5 in.; a square angular block, has been moved; no groovings or striæ. A hard Sandstone, very like Kellaways Rock; 150 ft. above sea-level; was found on the top of a knoll which is composed principally of Boulder Clay.

14. On the Graffitoe farm, about 100 yds. E. of farmstead, 2 miles E. of Hunmanby, and 3 miles S. of Filey, are two boulders:—2 ft. 2 in. \times 1 ft. 11 in. \times 1 ft. 4 in.; sub-angular, has been moved, but formerly rested upon Boulder Clay intermixed with gravel; no striæ or groovings; red sandstone. 4 ft. 1 in. \times 3 ft. 2 in. \times 2 ft.; oblong and sub-angular, has been moved, but when found its longest axis was direct N. and S.; no striæ; Grey Granite; formerly rested on same bed as preceding boulder.

15. At the base of a cutting on the North Eastern Railway about a mile S. of Filey Railway Station, 3 ft. 6 in. \times 2 ft. 11 in. and projects above the ground about 1 ft. 6 in.; oblong and sub-angular, has not been moved; longest axis N. to S.; no striæ or groovings; Dark Blue Whinstone; 150 ft. above sea-level; is about midway in the centre of a ridge of Boulder Clay, sand and gravel.

16, 17, 18.—REIGHTON.

16. On the property of Mr. Gullan, Reighton, near Filey, and on the S. side of St. Helen's Road ($2\frac{1}{2}$ miles E. from Hunmanby, and $4\frac{1}{2}$ miles S. from Filey) are two boulders:—2 ft. 2 in. \times 1 ft. 7 in. \times 1 ft. 6 in. and 1 ft. 9 in. \times 1 ft. 6 in. \times 10 in. Both are sub-angular, and are Dark Blue Whinstone. They were taken from a ridge of gravel and Boulder Clay close by; about 150 ft. above sea-level; no striæ or groovings.

17. On Mr. Crow's Manor Farm, about 100 yds. W. of Reighton village, are two boulders:—2 ft. 4 in. \times 1 ft. 7 in. \times 1 ft. 2 in., and 1 ft. 10 in. \times 1 ft. 2 in. \times 1 ft. Both are oblong and sub-angular, and are Dark Blue Whinstone. They were both taken from a field close by, and were exposed on the surface. No striæ or groovings. Are about the same level as preceding blocks.

18. At the entrance to Reighton village are four boulders:—3 ft. 5 in. \times 1 ft. 10 in. \times 1 ft.; 2 ft. 3 in. \times 1 ft. 11 in. \times 1 ft. 4 in.; 3 ft. 5 in. \times 1 ft. 1 in. \times 11 in.; 2 ft. 3 in. \times 1 ft. 4 in. \times 9 in. All are oblong and sub-angular, and are Dark Blue Whinstone; have no striæ or groovings. Have been in present position beyond memory, but there is little doubt have been originally upon surface of adjoining fields, and removed for agriculture, but could not be broken for repairing of roads.

19 to 26.—CAYTON, NEAR SCARBOROUGH.

ISOLATED BOULDERS.

19. On Dr. Taylor's estate, and in the farm-yard of Mr. N. Smith, on the west side of the village; 2 ft. 8 in. \times 1 ft. 9 in. \times 1 ft. 2 in.; angular; has been moved; no striæ or groovings. Whinstone. It is now used as a mounting block; 150 ft. above sea-level. It rests upon drift, composed of gravel, sand, and clay.

20. On Mr. Hodgson's estate. It is close to Mr. Smith's blacksmith's shop, and used for a seat, also for a mounting stone; 2 ft. \times 1 ft. 8 in. \times 1 ft. 3 in.; sub-angular; has been moved; no striæ or groovings. Whinstone; 200 ft. above sea-level. It rests now upon surface soil.

21. On Mr. Stead's estate. It now forms the foundation-stone at the south corner of an old house inhabited by W. Fowler, shoe-maker, on the side of the village main street; 1 ft. 9 in. \times 1 ft. 6 in. \times 1 ft. 3 in.; flat, angular block; has been moved; no striæ or groovings; 150 ft. above sea-level. Whinstone.

22. About 100 yds. E. of the railway station, at the N. side of the road, close to the gate, leading into the Valley Field, occupied by Mr. N. Smith; 2 ft. 2 in. \times 1 ft. 8 in. \times 1 ft.; sub-angular; probably has been moved; no striæ or groovings. Whinstone; 150 ft. above sea-level. Rests on surface soil.

23. In the foundations of an old cottage belonging to Mr. Stephenson on the E. side of the street. This cottage is about 250 yds. N. of the church; 2 ft. 7 in. \times 1 ft. \times 1 ft. 2 in.; rounded and oblong; has been moved; no striæ or groovings exposed; 150 ft. above sea-level. Rests on surface soil. Coarsely-grained Dolerite.

24. On Mrs. Wilson's estate, in the centre of the village on the W. side of the Scarborough and Filey road; 2 ft. 5 in. \times 1 ft. 10 in. \times 1 ft. 3 in.; rounded; has been moved; no striæ or groovings. Dolerite. 200 ft. above sea-level.

NOTE.—The possession of this boulder is at present in dispute. It originally was in the foundation of some very old thatched cottages, and when the new property was built some years ago, a

large block of Sandstone was given in exchange, and now that the Sandstone is a fixture, they dispute the other being taken away.

25. On Dr. Layton's estate, Cayton Carr, about a mile and a half W. of Cayton village. It was taken out of a ridge of gravel that runs through the centre of a field called the 'Six-acre Strip,' in the occupation of Mr. Smith. Its present position is close to the gate entering the field in which it was found; 2 ft. 4 in. \times 1 ft. 7 in. \times 9 in.; sub-angular; no striæ or groovings. Whinstone. 250 ft. above sea-level.

NOTE.—In a heap close by are several smaller boulders taken out of the same field, comprising Grey Granite, Red Granite, Mountain Limestone, Whinstone, and Sandstone.

26. Is at the S. corner of a wall surrounding the engine-house of the Scarborough Waterworks Co., about one mile E. of the village of Cayton; 2 ft. \times 1 ft. 8 in. \times 1 ft. 3 in.; rounded; long-shaped; no striæ or groovings. Mountain Limestone.

NOTE.—It was brought from the beach below to strengthen the corner of the wall.

27, 28, 29.—CAYTON, NEAR SCARBOROUGH.

GROUPS OF BOULDERS.

27. In a bye-road leading from Cayton to Scarborough are a large number of boulders, of which upwards of thirty will average 1 ft. 4 in. \times 9 in., and over seventy others are over a foot in diameter. The larger ones are sub-angular; the smaller ones rounded. All have no doubt been conveyed from adjacent fields; no striæ or groovings are to be seen on *exposed* surfaces. They are different kinds of Sandstone, and are about 150 ft. above sea-level.

28. On Miss Craven's estate, in the village of Cayton, about 300 yds. N. of the church and on the main road to Scarborough, is a group of nine boulders, four of which are Whinstone, and upon an average 1 ft. 11 in. \times 1 ft.; the other five are Sandstone, and average 1 ft. 8 in. \times 1 ft. 2 in. The Whinstones are mostly sub-angular; the Sandstones angular; there are no striæ or groovings exposed; they are about 150 ft. above sea-level. Some of them are entirely exposed, the rest being partially covered with other stones and soil.

29. On Miss Craven's estate, in the village of Cayton, and about 250 yds. N. of the church in a bye-road called North Lane are a number of boulders, the seven largest of which I have noted as follows:

No. 1.	1 ft. 11 in. \times 1 ft. 4 in. \times 1 ft.	Red Sandstone.	Angular.
„ 2.	2 ft. 6 in. \times 1 ft. 2 in. \times 1 ft.	Whinstone.	Angular.
„ 3.	1 ft. 10 in. \times 1 ft. 4 in. \times 1 ft. 3 in.	Whinstone.	Rounded.

Naturalist,

- No. 4. 1 ft. 5 in. \times 1 ft. 3 in. \times 1 ft. Hard grey Sandstone. Sub-angular.
 „ 5. 1 ft. 6 in. \times 1 ft. \times 9 in. Whinstone. Rounded.
 „ 6. 1 ft. 4 in. \times 9 in. \times 7 in. Mottled Granite. Sub-angular.
 „ 7. 2 ft. 4 in. \times 1 ft. 2 in. \times 6 in. Whinstone. Angular.

Could not observe any striæ or groovings. The rising ground is principally composed of drift, gravel, sand, and clay, whilst the hollows are filled with deep peat-bogs.

NOTE.—The great bulk of the boulders in this district are composed of Sandstone and Whinstone; of these, thousands have been broken up and used to mend the roads from time unknown. There is no doubt about the roads having received their supply of metal from this source. Those left behind (as above) are those which could not be broken up, or which have been taken out of the land at a recent date.

30, 31, 32.—LEBBERSTON, NEAR SCARBOROUGH.

ISOLATED BOULDERS.

30. On Mr. Wardell's estate, in a grass field at the E. end of the village, and about 100 yds. W. of the Scarborough and Filey Road; 4 ft. 3 in. \times 2 ft. 5 in. \times 2 ft. 7 in., but evidently one-half of it is embedded. Sub-angular; longest axis, N.W. to S.E.; should think it has not been moved. There are remains of several groovings which are much worn, and there are also striæ on the side of the block, in the direction of the longest axis. Whinstone. Is 200 ft. above sea-level. Is near the top of a ridge of gravel-drift.

31. On Mr. Jackson's estate, at the E. end of the village, near a yard door, on the W. side of the road; 2 ft. 3 in. \times 1 ft. 9 in. \times 2 ft. 3 in. Angular, and is used as a stepping or mounting stone. Has been moved, but is known to have been in its present position for more than a century; no striæ or groovings; Whinstone; 200 ft. above sea-level. No doubt has been obtained from gravel-drift in vicinity, but now rests on the surface soil.

32. On Mr. H. Watson's estate. Is in a grass-field about a quarter of a mile north of the Gristhorpe Railway Station, Hull and Scarborough branch; 4 ft. 2½ in. \times 2 ft. 5 in. \times 3 ft. 6 in., and partially embedded; sub-angular; flat on one surface; long-shaped: its bearing N. and S. There appear to be some striæ, which have become very faint from exposure, but the stone being grown over with Lichen, they are difficult to determine. Upon the under side, however, is a well-defined groove about 1 ft. long. Whinstone. The popular tradition is, that it was thrown by his Satanic Majesty at one of his satellites for staying out too long. An old farmer avers he found it one morning, but the previous evening it was not there. 200 ft. above sea-level. Rests on Boulder Clay.

33, 34.—LEBBERSTON, NEAR SCARBOROUGH.

33. On Mr. Welburn's estate, and upon a farm in the village occupied by Mr. R. Brown, are two boulders, 150 ft. above sea-level. Dimensions of No. 1 boulder :—3 ft. 2 in. \times 1 ft. 10 in. \times 1 ft. 2 in.; sub-angular; has been moved; Whinstone. Dimensions of No. 2 boulder :—3 ft. 2 in. \times 2 ft. \times 1 ft. 8 in.; angular; has been moved; Whinstone. Both have evidently been found in the land. No. 2 was dug out of the garden in front of the house, close to the street, and moved to its present position. Lebberton village is situated on a ridge of gravel.

34. In Leys Lane, at the entrance to the village of Lebberton, on the north side of the lane, and west end of village, is a group of boulders :—

No. 1.	2 ft. 7 in. \times 1 ft. 6 in. \times 9 in.	Whinstone.	Sub-angular.
„ 2.	2 ft. 3 in. \times 1 ft. 3 in. \times 10 in.	„	„
„ 3.	2 ft. 1 in. \times 2 ft. 1 in. \times 1 ft. 2 in.	Coarsely-grained Dolerite.	Rounded.
„ 4.	2 ft. 4 in. \times 1 ft. \times 9 in.	Sandstone.	Sub-angular.
„ 5.	2 ft. 1 in. \times 1 ft. 6 in. \times 1 ft.	„	„

There are no striæ or groovings upon them. They are about 100 ft. above sea-level; are all close together, and exposed on the surface.

35.—FILEY.

There is a boulder in the North Eastern Railway cutting about one mile N. of Filey in the direction of Gristhorpe; 2 ft. 10 in. \times 2 ft. 3 in. \times 1 ft. 4 in.; rounded and pear-shaped; has been moved; is now at the base of the cutting laid across a gutter or water-way; no striæ or groovings. Dark Blue Whinstone; 200 ft. above sea-level. Was connected with a long ridge of gravel, sand, and clay, which was cut through when making the line.

36.—GRISTHORPE.

There is a boulder in the North Eastern Railway cutting about 200 yds. N. of Gristhorpe Station, and on the east bank of the cutting. It is in the parish of Gristhorpe, near Scarborough; 2 ft. \times 1 ft. 10 in. \times 1 ft.; angular, almost square; longest axis N. and S.; has not been moved; no groovings or striæ can be seen, but it is now almost covered with soil, which has fallen from above. It is a light-coloured Sandstone, like the Moor Grit near Scarborough; 200 ft. above sea-level; it is in a bank of rough gravel, clay, and sand.

37.—SEAMER.

GROUP.

In the parish of Seamer, near Scarborough (N. Riding); about three miles S.S.W. of Scarborough, and about two miles S.E. of Seamer village, and close to Seamer Junction (N.E.R.), on the estate of Lord Londesborough.

No. 1.	1 ft. \times 9 in. \times 6 in.	Red Granite.
„ 2.	2 ft. 6 in. \times 1 ft. 10 in. \times 1 ft. 4 in.	Shap Granite.
„ 3.	1 ft. \times 1 ft. \times 9 in.	„
„ 4.	1 ft. 6 in. \times 1 ft. \times 9 in.	„
„ 5.	1 ft. 2 in. \times 1 ft. \times 8 in.	„
„ 6.	1 ft. 8 in. \times 1 ft. 6 in. \times 9 in.	„
„ 7.	1 ft. 6 in. \times 1 ft. 2 in. \times 8 in.	Mica Schist.
„ 8.	1 ft. 6 in. \times 1 ft. 6 in. \times 1 ft. 6 in.	Red Schist.

All are rounded; they have been moved, but were obtained from the Seamer Gravel Drift; no striæ or groovings are visible; about 200 ft. above sea-level. The Gravel Drift of Seamer overlies the Coralline Oolite.

REPORT UPON BOULDERS IN THE GROUNDS OF THE
YORKSHIRE PHILOSOPHICAL SOCIETY, YORK.

H. M. PLATNAUER, B.Sc., F.G.S.,
Curator of the York Museum.

NOTE.—The following were obtained from the Boulder Clay that was dug out when the York New Station was built, and are placed about the grounds as examples of travelled boulders.

1. Shap Granite; irregular shape; smooth; 2 ft. 9 in. \times 1 ft. 10 in. \times 11 in.
2. Shap Granite; irregular; parallelopiped; rough surface; 1 ft. 4 in. \times 1 ft. 4 in. \times 10 in.
3. Shap Granite; roughly ellipsoidal; smooth surface; 2 ft. 2 in. \times 1 ft. 1 in. \times 1 ft. 2 in.
4. Shap Granite; irregular mass; rounded, but not smooth; 3 ft. 1 in. \times 2 ft. 8 in. \times 1 ft. 10 in.
5. Shap Granite; irregular oval; smooth; 2 ft. 9 in. \times 1 ft. 10 in. \times 1 ft. 7 in.
6. Whitish Limestone; flat piece, polished and striated on one side; 3 ft. \times 1 ft. 3 in. \times 8 in.
7. Estuarine Sandstone; rounded mass; 1 ft. 4 in. \times 1 ft. 1 in. \times 9 in.
8. Dark-coloured Mountain Limestone; polished and striated; 1 ft. 5 in. \times 1 ft. 2 in. \times 9 in.

9. Limestone (Oolitic, but of what horizon I cannot say); smooth; striated on one side; 1 ft. 4 in. \times 1 ft. 3 in. \times 9 in.
10. Similar to No. 9; 1 ft. 3 in. \times 1 ft. 2 in. \times 7 in.
11. Sandstone (probably Estuarine); angular; irregular; 1 ft. 5 in. \times 1 ft. 2 in. \times 1 ft. 1 in.
12. Grey arenaceous Limestone (probably Jurassic); irregular; smoothed on one side; 1 ft. 1 in. \times 1 ft. 3 in. \times 10 in.
13. Similar to No. 12; smooth on one side; 1 ft. 8 in. \times 1 ft. 4 in. \times 1 ft. 1 in.
14. Light-coloured Sandstone; smooth; egg-shaped; striated; 2 ft. \times 1 ft. 2 in. \times 1 ft. 6 in.
15. Lithostrotion; small, polished, and rounded mass; 1 ft. \times 9 in. \times 7 in.
16. Greenish-grey Trap (probably a Hornblende-Andesite); an irregular quadrate mass, trapezoidal, in section at one direction; the faces at an obtuse angle are polished and somewhat striated; 2 ft. 6 in. \times 2 ft. \times 1 ft. 4 in.

REPORTS UPON BOULDERS NEAR NORTHALLERTON.

REV. THOS. PARKINSON,

Vicar of North Otterington, near Northallerton.

THORNTON-LE-BEANS, NEAR NORTHALLERTON.

In the centre of the village, at the left or north side of the village street, going eastwards; township of Thornton-le-Beans, parish of North Otterington; length, 3 ft. 10 in., E. and W.; breadth, 3 ft. 2 in., N. and S.; above ground, 2 ft. 4 in., and probably about the same in the ground; rounded; uncertain whether it has been moved or not; longest axis, E. and W.; no striæ or groovings; Shap Granite; isolated; rests on clay.

THORNTON-LE-MOOR, NEAR NORTHALLERTON.

In the township of Thornton-le-Moor, parish of North Otterington, are three boulders:—

No. 1. In an open field near a well, named 'Stockeld's Well'; about 4 ft. 6 in. \times 2 ft. 8 in. \times 2 ft. 8 in.; somewhat wedge-shaped; rounded; cannot say whether it has been moved or not; longest axis N. and S. (nearly); ice-worn; isolated; rests on clay; Granite.

No. 2. In a lane called 'Endecon'; about 300 yds. from S. end of village of Thornton-le-Moor; 3 ft. 2 in. \times 2 ft. \times 2 ft.; was considerably broken a few years ago; has been moved; Coarse Dolerite or Gabbro; isolated; rests on clay.

No. 3. On the road-side near farm-house called Hill Top or Thief Hole Farm; 3 ft. 8 in. \times 2 ft. 9 in. \times 2 ft. 9 in.; all above ground; rounded a little, angular in some parts; has been moved; taken out when foundation was dug of an adjacent building; isolated; rests on clay; Close-grained Trap or highly altered fine Ash.

NORTH OTTERINGTON.

In township of North Otterington; on Otterington Farm, in field near the entrance gate from Northallerton-road, and about 300 yds. on the road from North Otterington Church; 4 ft. \times 2 ft. 11 in.; height above ground—one side, 1 ft. 6 in.; the other, 3 to 4 in.; somewhat wedge-shaped; angles all rounded; has been moved; there are four ruts running longitudinally on the top and in the direction of longest axis; Granite; rests on gravel.

NORTH STAINLEY, NEAR RIPON.

REV. R. A. SUMMERFIELD,

Vicar of North Stainley.

In the parish of North Stainley, near the hamlet of North Leys, and about 100 yds. from the 'Smithy' (so marked on the 6-in. Ordnance Map), on the west side of the road to North Stainley, is a boulder; 3 ft. 3 in. \times 2 ft. 5 in. \times 1 ft. 7 in.; sub-angular; it has been moved from the adjoining field to the place it now occupies about twenty years, being a hindrance to ploughing, etc.; Carboniferous Gritstone; about 170 ft. above sea-level; connected probably with a long gravel ridge, which is about two miles in width, and which abuts on the western bank of the River Ure and underlies all the parish; in this ridge are a large quantity of scratched, grooved, and polished blocks, varying much in size; one block—5 ft. \times 3 ft. \times 1 ft. 3 in.—is a mass of large producti.

THE NORBER GROUP OF BOULDERS.

J. W. DAVIS, F.G.S., F.S.A., etc.,

Hon. Sec. Yorkshire Geological and Polytechnic Society

At Norber near Clapham, Yorkshire, extending over an area of three-fourths of a mile square, are several hundreds of boulders. They are of Silurian Grit resting upon Mountain Limestone, and of all sizes up to 16 and 20 ft. in diameter. They are angular; they show slight striations on under surface rarely, but are not easily determined. From 800 to 1,250 ft. above sea-level. Rock identical

with that of the boulders is found in the valley to the north, at various spots varying from a mile to a mile and a half from the place where the boulders are most thickly congregated. Are all exposed on the surface; in many instances the masses of Silurian Grit have protected the Limestone immediately beneath, whilst the surrounding surface has been removed and they now stand on pedestals of Limestone, 12 to 18 in. in height.

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SALTBURN, YORKSHIRE (N. RIDING).

W. Y. VEITCH, M.D.

Middlesbrough.

Saltburn; thirty feet from the top of the road leading up from the beach; almost opposite the Zetland Hotel; 3 ft. 8 in. high, 14 ft. in circumference; is entirely out of ground on one side; rounded; has no long axis, no groovings, or striations; Shap Fell Granite; has no popular name and is without a legend; about 150 ft. above sea-level; is not indicated upon any map; it rests upon Middle Glacial Drift.

REPORT UPON BOULDERS AT FILEY AND HUMMANBY.

WILLIAM HODGSON GILL,

Stourton, Leeds.

At Filey, Yorkshire, and lies on the beach behind the wooden piles at the base of cliff, near Ravine Villas; 3 ft. 3 in. \times 2 ft. 2 in. \times 2 ft. 2 in.; is rounded; no groovings or striations; Shap Fell Granite; it rests on Boulder Clay.

At Hunmanby, at the end of the road leading to the beach; 3 ft. 7 in. \times 2 ft. 3 in. \times 2 ft. 3 in.; is sub-angular; no groovings or striations; Shap Fell Granite; it rests on Boulder Clay.

At Filey, on the beach between Primrose Valley and Hunmanby Road ; 4 ft. 1 in. \times 2 ft. 9 in. \times 2 ft. 1 in. ; angular ; no groovings or striations. Calcareous sandstone with nodules and pebbles. The specimen has been referred to Mr. C. Fox Strangways, F.G.S., and he reports that it resembles so closely some parts of the Dogger that he has little hesitation in referring it to that bed. It rests on Boulder Clay.

LINDHOLME (S.W. YORKS.).

C. BROWNRIDGE, F.G.S., Assoc.M.Inst.C.E.,
Leeds.

These boulders are on the west front of Lindholme Hall, which is about four miles to the S.E. of Hatfield. The Hall is upon slightly elevated ground in the centre of Hatfield Chase, a wide extent of bog. The deposits in the vicinity of the Hall consist of gravel and sand, resting upon Triassic Sandstone. The boulders extracted from the gravel include magnesian limestone, carboniferous sandstones of various kinds, gannister and millstone grit, porphyries and basalts, quartzite, vein quartz, black flints, chert, etc.

No. 1. 1 ft. 10 in. \times 1 ft. 9 in. \times 1 ft. 8 in. ; longest axis, N.E. to S.W. ; sub-angular ; closely-grained Flinty Trap, not unlike some Lake country rocks of that character ; no groovings or striations observed.

No. 2. 2 ft. 11 in. \times 2 ft. 0 $\frac{1}{2}$ in. \times 1 ft. 7 in. ; longest axis, N.E. to S.W. ; rounded ; a coarse grit, almost a conglomerate with large quartz pebbles ; no groovings or striations observed.

Lindholme is a perfect solitude, and here a mythical personage, half giant, half hermit, known as ' William of Lindholme,' is said to have lived, and to have brought the above stones, known traditionally as the ' Thumb Stone ' and the ' Little Finger Stone,' to their present position.

GUISBOROUGH (NORTH RIDING).

WILLIAM GREGSON,

Baldersby, Thirsk ; Hon. Local Secretary, Yorkshire Geological and Polytechnic Society.

In the Priory Grounds, Guisborough, are two boulders :—No. 1 is 4 ft. \times 3 ft. 6 in. \times 1 ft. 3 in. ; No. 2 is 3 ft. 6 in. \times 3 ft. 2 in. \times 1 ft. ; both are sub-angular and have no groovings or striations ; they are isolated and about 300 ft. above sea-level. They are composed of Grey Granite, and rest on Lower Lias.

Nov. 1888.

CUNDALL, NEAR BOROUGHBIDGE (NORTH RIDING).

T. CARTER MITCHELL, M.R.C.S.,

Topcliffe, Thirsk.

In the parish of Cundall, on the Leckby estate, five miles from Boroughbridge, about a quarter of a mile above 'Elmire Ings,' as given on the Ordnance Map, is a boulder; it is in the bed of the river Swale, close to the Leckby bank; it is entirely out of the water when the river is very low; 4 ft. 3 in. \times 3 ft. \times 2 ft. 9 in.; is more or less rounded; no striæ or groovings; Shap Granite; is about 50 ft. above sea-level. There is a long ridge of gravel and sand about a quarter of a mile from where the boulder lies.

YOULTHORPE, NEAR STAMFORD BRIDGE (EAST RIDING).

ROBERT MORTIMER,

Fimber.

At Youlthorpe, between Bishop Wilton and Stamford Bridge, is a large isolated boulder; had not been moved by man until recently, when it was carted into the farmyard of Mr. Hawkins. Is now used as a mounting block; 3 ft. 9 in. \times 2 ft. 9 in. \times 2 ft. 10 in. Youlthorpe is on the Keuper Marl and not far from the foot of the Chalk escarpment of the Wolds. Pure white, very quartzose, Sandstone.

SEAHAM HARBOUR (Co. DURHAM).

REV. ARTHUR WATTS, F.G.S., ETC.,

Vice-Principal, Bede College, Durham.

This boulder is in the grounds of Mr. R. L. Hawthorne, Hawthorne Tower, Seaham Harbour, on north side of Hawthorne Drive and W. of the Tower; was removed from an adjacent field, when draining, to its present position; 5 ft. 10 in. \times 3 ft. 8 in. \times 1 ft. 3 in.; weight, 1 ton, 18 cwt.; sub-angular; it originally pointed, by its long axis, 20° E. of N. magnetic, 42° E. of N. true bearing. There are seven grooves across the stone—five perfect, two imperfect; there are two sets of striæ, the one set of six are nearly obliterated by the other numbering about seventy; the smaller groups of striæ are nearly in the line of the longest axis, the larger group make an angle of about 60° with the long side. It is Encrinital Carboniferous Limestone, and the nearest in situ that I know of is twenty-five miles due west at Frosterley; it has no popular name or legend; is about 80 ft. above sea-level; it was discovered in March 1879, and is not indicated on any map; it formed part of a mass of clay, sand, gravel, and boulders, that is seen in a coast section to lie in a hollow in the Magnesian Limestone about 100 yds. wide and 60 ft. or more deep.

Naturalist,



3 NOV 1888

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A MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.



EDITED BY

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AND

WM. EAGLE CLARKE, F.L.S., M.B.O.U.,

CORRESPONDIRENDER MITGLIED DES ORNITHOLOGISCHEN VEREINS IN WIEN.

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THE IGNEOUS DYKES OF THE NORTH OF ENGLAND.

ALFRED HARKER, M.A., F.G.S.,

Fellow of St. John's College, Cambridge.

AMONG the minor phenomena of field geology, few features are more striking than the various igneous dykes of which the British Isles afford such numerous examples. Ranging as more or less vertical walls through stratified or other rocks of totally dissimilar character, and often persisting for considerable distances in a straight line with approximately uniform width and constant lithological characters, they are sufficiently distinctive to be at once recognised when found. Often they stand out slightly above the adjacent rocks at the surface, owing to superior durability; in other cases they have weathered more rapidly than the 'country rock,' and figure in the landscape as slight depressions or trenches; in some places, again, small dykes are liable to be passed over unless carefully sought.

In many modern volcanoes the filling of fissures with molten lava, which solidifies into dykes, is seen to be a common accompaniment of volcanic action. Many of the dykes exposed among the rocks by denudation appear, on the other hand, to be offshoots of deep-seated masses of igneous material. They have been injected under great pressure from below, and in most cases probably never reached the surface of the earth. Again, it appears that dykes have served as the channels by which molten matter on a very large scale has been forced upward and extruded over the surface in massive lava-flows. By Richthofen and others some of the grandest out-pourings of lava in Tertiary and possibly in earlier times have been ascribed to these 'fissure-eruptions' rather than to volcanic vents of the ordinary type.

In the nature of the case, it must be extremely difficult to obtain direct ocular evidence of the connexion of dykes in partially denuded districts, either with plutonic bosses or reservoirs, or with volcanic activity long dead. It seems probable, however, that much may yet be done in this direction by detailed work—by noting the localities of dykes (many of which are known, but doubtless many more unknown), and by observing their bearing, their width, and especially their petrological characters.

The earliest dykes in the North of England must naturally be looked for in the Lake District, where the oldest strata in this part of the country crop out. Here volcanic conditions are known to have

prevailed throughout the time when the rocks of the Borrowdale Series were laid down, and we may therefore expect to find dykes of this age in the same district. The most imposing manifestations of vulcanicity belonging to this age are the andesitic lavas and agglomerates so largely developed in the central zone of the Lake District, forming the greater portion of the Borrowdale Series of rocks. Dykes of similar (i.e. 'intermediate') composition do indeed occur intersecting the Skiddaw Slates at certain places; but since the sites of the andesitic volcanoes are not certainly known (Mr. Clifton Ward considered the Castle Head, Keswick, to mark one of these), it is impossible to connect the dykes definitely with this period of volcanic activity. It is of course to be borne in mind that, owing to their conditions of consolidation, the rocks of the larger dykes would take the structure of dolerite or diabase rather than andesite.

The andesitic rocks were succeeded by an out-pouring of acid lavas (rhyolites), which are now well seen along the southern border of the former series. The volcanoes which emitted these newer lavas are long since destroyed; but there are good reasons for supposing that their basal wrecks are still represented by some of the masses of crystalline acid rocks, which break through, especially on the boundary of the Skiddaw Slates and the Borrowdale Series, in St. John's Vale, in Ennerdale and by Buttermere, and perhaps on Caldbeck Fells in the north. If so, this fixes the date of numerous dykes of micro-granite, granophyre, and quartz-porphyry which may credibly be linked with the masses in question. For instance, the dykes of spherulitic quartz-porphyry near Armboth and Helvellyn seem to belong to the microgranitic boss of St. John's Vale: others in Ennerdale are doubtless connected with the granophyre of the Ennerdale mass. A number of dykes of granite and quartz-porphyry to the south of Shap Wells may be related to the porphyritic granite boss close by; but these must be of later date than the others mentioned, for the Shap Wells boss breaks through the Coniston Limestone Series, which overlies the Borrowdales, and perhaps through higher strata. This invasion of acid rocks must, however, have taken place during some part of the Silurian period proper, or immediately after it, for pebbles of the well-known Shap Granite are found in the basal conglomerate of the Carboniferous, the Old Red Sandstone of the earlier writers. Again, granite and quartz-porphyry dykes on Kirkfell and near Bootle seem to be allied to the great granitic mass of Eskdale and Wastdale; but there is nothing to connect this system of intrusions definitely with the rhyolitic lavas. Perhaps, as first suggested by Sedgwick, the injection of the molten matter was connected with the folding and disturbance of the area

at the close of the Silurian period, and the same conjecture is plausible for the granite of Shap Wells and its attendant dykes.

Certain groups of dykes in the Lake District show a parallel disposition in evident relation to the strike of the rocks in which they occur. These must clearly be due to more widely operating agencies than are the dykes which show no special disposition, or radiate in rude order about plutonic bosses. The red felspathic dykes to the west of Windermere and some of those to the north of Kendal, although decidedly cutting across the strata, run parallel to the strike. It follows that these dykes were injected at a time posterior to the disturbances which gave the beds their present direction of dip, that is, later than the close of the Silurian, though not necessarily much later.

A very remarkable group of dyke-rocks is that of the lamprophyres or 'mica-traps,' so-called from their large proportion of dark mica, occasionally replaced, however, by hornblende. They may be more minutely classed as minette, kersantite, vosgesite, etc., and a number of them have been described by Prof. Bonney and Mr. Houghton. Such rocks are largely represented among the dykes seen east of Windermere, to Kendal, Sedbergh, and Dent; they appear also in Swindale and Knock Becks to the north-east of Appleby, in Ingleton Dale, and in the little Silurian inlier discovered in Teesdale by Messrs. Gunn and Clough. From their occurring in all the Silurian strata, not infrequently occupying dip-faults, but never penetrating into the Carboniferous, the mica-traps may safely be referred to the Old Red Sandstone period. Owing to their readily destructible nature, and often their small width, they are not always easy to detect.

Going now to the far North, we find in the Cheviot district certain quartz-porphyry dykes breaking through andesitic lavas of Old Red Sandstone age. Mr. Teall, who has given a valuable description of all the igneous rocks of this district, regards these intrusions as probably connected in origin with the Cheviot granites, and as constituting the last phase of one general system of igneous outbursts during Old Red Sandstone times. The order of succession, acid rocks following those of intermediate composition, is one which can be verified in numerous other districts, and which lends itself to some interesting speculations.

There is no very clear evidence of the injection of igneous dykes in the North of England during the Carboniferous period, although the 'toad-stones' (olivine-dolerite lavas) of Derbyshire indicate a certain amount of contemporaneous volcanic activity. It is probably to the close of this period that we must refer the intrusion

of the well-known Whin Sill, a great sheet of diabase extending from the Eden Valley to the Farne Islands; and there is little doubt that some of the Northumberland and Durham dykes, such as that of Hett, belong to the same date. This, however, raises a difficult problem—the separation of these dykes from those of Tertiary age. There are in the North of England a large number of dykes of basic and sub-basic characters, cutting Carboniferous rocks, but—with one or two exceptions—not entering the Mesozoic tracts. The difficulty is to separate those injected in the interval between the Carboniferous and Permian from others which, there are good reasons to believe, are of Lower Tertiary age. Of course, if a dyke can be seen to rise through the uppermost Carboniferous beds and be abruptly cut off at the base of the overlying strata, there can be no doubt of its pre-Permian age; but such relations can rarely be verified. The only large dyke which cuts through Mesozoic rocks is that of Cleveland, which intersects the Lower Oolites at its eastern extremity, and this may be referred, without hesitation, to the only subsequent period which we know to have produced igneous rocks in Britain—the Lower Tertiary. Unfortunately, the majority of the dykes in question occur only in tracts occupied by Carboniferous and older strata, and cannot be traced to the edge of the Permians, thus leaving it a matter of doubt to which of the two groups any individual dyke is to be referred. According to Mr. Teall, petrological study affords no certain data for separating the earlier set from the later. Perhaps some conclusions might be drawn from their bearings, if regarded collectively. Prof. Lebour places the dykes of Northumberland and Durham in two classes—(a) those striking E.-W. or E.S.E.-W.N.W., and (b) those striking N.E.-S.W. or E.N.E.-W.S.W. The former class, which seems to have the more uniform direction, probably includes dykes mostly of Tertiary age, while pre-Permian dykes may perhaps be looked for among those of the second category. The former are to be linked with an enormous development of basic dykes in southern, central, and western Scotland; and they have recently derived a new interest from Dr. A. Geikie's theory, which makes them the channels of great fissure-eruptions of basaltic lava in early Tertiary times. Many of these dykes, scattered from Whitby to Stornoway, are remarkable for their singular persistence in nearly straight lines for very great distances. For example, the great augite-andesite dyke—variously known as the Cleveland, the Cockfield, and the Armathwaite dyke—runs from near the coast of North Yorkshire, through Durham and Cumberland, to near Carlisle, a length of 110 miles, and possibly to near Ayr, eighty miles farther. Dr. Geikie has also drawn attention

to the manner in which the Tertiary dykes range across the country without any respect to strike, faults, or other geological accidents in the rocks traversed. In this they differ from many other sets of dykes, which have a bearing often clearly dependent on the lie of the strata they intersect. For instance, the post-Carboniferous but pre-Permian dykes of the Menai Straits run at right angles to the strike of the Carboniferous rocks, and often fill dip-faults; and the same is true of dykes of like age in some other districts, including perhaps the Isle of Man. Dr. Geikie, however, considers some of the Isle of Man dykes as belonging to the great Tertiary outburst; while Mr. Clifton Ward, again, believed some in the south of the island to be connected with a volcanic outbreak during the Carboniferous period. Here is a problem for the Manx geologists to solve.

Finally, if it be permitted to theorise in a subject so little known, we may perhaps conveniently group igneous dykes under three heads, arranged in order of increasing geological importance:— firstly, those in connexion with volcanic necks or plutonic bosses, commonly presenting a rough radial arrangement about their source; secondly, those injected during or closely subsequent to movements of folding, etc., in the strata, sometimes showing a tendency to run approximately parallel, or more frequently perpendicular, to the axes of movement, and often along lines of faulting; and thirdly, those belonging to more extensive geological operations (fissure-eruptions, etc.), these dykes sometimes presenting a general parallelism, which may be part of a larger radial disposition, and being to a great extent independent of any minor geological features of the rocks through which they break.

NOTES—ORNITHOLOGY.

Rough-legged Buzzard at Meanwood, Leeds.—When passing along the Meanwood Road, on November 6th, just within Leeds borough boundary, my attention was called to a large bird in a stubble-field (apparently feeding), which my informant described as a Sea-Gull. When I endeavoured to approach it, it rose and flew slowly past me, alighting finally in a low tree. It was soon afterwards shot and proved to be a fine specimen of the Rough-legged Buzzard (*Archibuteo lagopus*). The bird was in excellent plumage, and measured 56 in. from tip to tip of wings.—H. KNIGHT HORSEFIELD.

Whitby Bird-notes.—The following extracts from my ornithological notes for this month may be interesting:—

November.—Young Golden-eye Duck (*Clangula glaucion*) shot in Whitby Harbour.

„ 3.—Immature specimen of Eider Duck (*Somateria mollissima*) killed in Whitby Harbour.

„ 9.—Another immature specimen of Eider Duck shot in the harbour of Whitby.

„ 10.—Large Black-backed Gull (*Larus marinus*) shot in the harbour.—THOMAS STEPHENSON, Whitby, 22nd November, 1888.

OCCURRENCE OF THE AMERICAN PECTORAL SANDPIPER ON THE YORKSHIRE COAST.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

AN example of this American Sandpiper (*Tringa maculata* Vieillot), one of two, supposed to be of the same species, was shot on the coast near Kilnsea on October 2nd, and left with Mr. Philip Loten, of Easington, for preservation. Mr. Loten was good enough to forward the skin for identification, with the information that after dissection he came to the conclusion it was an adult male; its maturity is also perhaps suggested by the plumage, the feathers being much abraded and worn; the markings on the breast are also of a distinctly sagittate character, although not so pronounced as in some examples of the bird I have seen from America.

This species is readily diagnosed from its near American ally, *T. bairdi*, as clearly pointed out by Mr. Seebohm in his excellent work, 'The Geographical Distribution of the Charadriidæ,' by its larger size. In *T. bairdi* also the tarsi and feet are black, and not yellowish-brown, and the central tail-feathers not longer than the outer, although the intermediate ones on each side are somewhat shorter. In *T. maculata* the central rectrices are the longest, and pointed. From the Siberian sub-species *T. acuminata* it differs in having the lateral rectrices more rounded, but this appears to be a somewhat uncertain character, as intermediate forms are known to occur.

The Pectoral Sandpiper has previously been recorded in Yorkshire, twice in 1853 and once in 1854 (see Clarke and Roebuck's 'Handbook of the Vertebrate Fauna of Yorkshire,' p. 74).

November 3rd, 1888.

NOTES—ORNITHOLOGY.

Pallas' Sand-Grouse at Wetwang-on-the-Wolds.—On Thursday, September 6th, about 4 p.m., a brace of Pallas' Sand-Grouse (*Syrhaptes paradoxus*) flew close to me within 100 yards of Wetwang Station. They were darker than I expected. The cry was 'tack—tack, tack—tack.'—E. MAULE COLE, Wetwang, viâ York, October 1888.

Pallas' Sand-Grouse in Lincolnshire.—A remarkably fine specimen of this rare visitor (*Syrhaptes paradoxus*) was shot in the parish of Goxhill, on Tuesday, October 23rd. It was one of a flock numbering about twenty, which were feeding on a piece of wheat stubble. They had been seen about the same field for some days.—J. W. HARRISON, Goxhill, Lincolnshire, October 24th, 1888.

Naturalist,

NOTES ON THE REED WARBLER.

F. B. WHITLOCK,
Attenborough.

ACCORDING to my observations in Mid-Trent Valley, the spring of 1888 was noteworthy for the abundance of the Sedge Warbler (*Acrocephalus phragmitis*) and Reed Warbler (*A. streperus*). The latter bird breeds with us in scattered pairs up and down the Trent and on the larger ponds every year, but this year we were favoured with quite little colonies.

Living near the river gives many opportunities of observing the habits of these warblers. They are rather late arrivals, and I never hear their song until the last few days of April or the beginning of May. It is easy, however, to overlook them in rough weather, as they are then silent, and the nature of their haunts renders observation very difficult. Their home is made in the half-cultivated willow beds, in which the withies have been standing for a year or two; they do not favour the better-cleaned holts, where there is a lack of undergrowth. I sometimes meet with a few pairs wherever the banks of the river are lined with bushy willows, but this is not always the case. The feathery reed-beds in which they delight in Norfolk are almost absent from this part of the Trent.

In their haunts they are restless, inquisitive little birds, and I find the best way to observe them is to take my dog with me, and let him wander about whilst I lie down, half concealed by the willows. The Reed Warblers and Sedge Warblers soon find him out, and when he returns some of them are sure to follow. On their catching sight I am usually treated to a burst of defiant song, interrupted with numerous changes of position and glances in my direction. This continues until curiosity is apparently satisfied, or perhaps an outbreak of song from a rival is the signal for a battle, when, quite heedless of my presence, the little combatants, twittering fiercely, chase one another in and out of the willow twigs with great rapidity, until the weaker bird is driven away. The splash of a passing boat or a stone thrown into their haunts will also rouse them into song.

The call-note is very similar to that of the Sedge Warbler, and may readily be imitated by drawing in the breath between the nearly closed lips. Often have I called up both species in this way, but the Sedge Warbler is usually first to respond.

The song is difficult to express in words, but it is neither so harsh nor so loud and continuous as that of the Sedge Warbler. It may

perhaps be described as a not unmusical jerky chatter. The female bird is shy and silent, and not so often seen as the male, except during incubation. They are rather late breeders; I seldom find nests containing eggs before the first week in June, sometimes even later. The site usually chosen is some willow twig about 5 ft. or 6 ft. from the ground, but I have seen them placed as high as 20 ft. in a tall willow-bush, as well as in a clump of nettle- or hemlock-stalks but a few inches from the earth.

The nests are very compact and neat structures. Compared with those of the Sedge Warbler they are very small. The latter usually measure some 5 in. across, whilst the former measure but 3 in. Outwardly they are constructed of dark-coloured grasses, fine roots, bits of moss, and a little wool and spider-cocoons. The cup, which is rather broader at the base than at the rim, is lined with fine, round, and lighter-coloured grasses, the rim being generally finished off with this material. So firmly are the nests bound to the supporting stalks or twigs that it is impossible to take one without cutting them away. The eggs, from three to five in number, vary in ground colour from pale French grey to light brown; the underlying spots are iron grey. The conspicuous spots or blotches which sometimes nearly cover the egg vary from greyish green to dark brown. Some eggs, in addition, have conspicuous black dots on the broader end. It is surprising how rapidly the nests are constructed. Some years ago a pair built where they were much disturbed by boys, and I know that three nests were taken, each containing eggs, in as many weeks.

The young birds are hatched in about twelve days, and the parents may then be observed busily searching the willows and herbage for small insects, with which to feed their brood.

On the wing the Reed Warbler may readily be distinguished from the Sedge Warbler by its more attenuated appearance, and its stouter head and broader tail. The flight is straight, but not long sustained. I have found Cuckoo's eggs in the nest of this bird.

No doubt the time of arrival, number of eggs, etc., varies with locality, but these notes are only intended to apply to the Mid-Trent and tributaries.

Attenborough, November 5th, 1888.

NOTE—ORNITHOLOGY.

Manx Shearwater near Nottingham.—A fine mature bird of this species (*Puffinus anglorum*) was picked up alive at Bestwood, about the last week in August.—F. B. WHITLOCK, Basford near Nottingham, Nov. 5th, 1888.

Naturalist,

THE NATTERJACK TOAD IN CHESHIRE AND LANCASHIRE.

[We have received a copy of a paper by Mr. Linnæus Greening, on 'British Frogs and Toads,' read before the Warrington Field Club, November 18th, 1887, and printed for private circulation, from which we extract the following interesting account of the Natterjack at Wallasey and in two Lancashire localities:]

Bufo calamita (Natterjack Toad) . . . is decidedly rarer and more local than our other English toad. . . . On the 2nd April, 1887, Mr. Gregson, Mr. A. Jolley, and myself paid a visit to the Wallasey sand-hills, where this toad abounds. Having arrived on the ground, the veteran naturalist (Mr. Gregson) soon pointed out the outward and visible sign of the den of this creature. This distinguishing sign is the shape of the holes in which the Natterjacks hybernate, and to which they return during the daytime, even after hybernation, being exclusively nocturnal feeders. The entrance to each hole is semi-circular, just large enough to admit its tenants, of which there are usually two, male and female. It is not very pleasant to put your hand down a hole 20 inches deep, and feel something cold, which is, or should be, the nose of the toad. After Mr. Gregson had fetched a pair out, without suffering death, we set to work and found considerable numbers. . . . It is a very curious fact that when first taken from their holes they are small, but soon seem to expand or fill up to their normal size. The cause of this, I take it, is the inflation of the lungs and skin. . . . As a matter of course respiration is almost arrested during hybernation. Another curious fact is that although they enter their holes head foremost, yet, when found, their noses always point outwards. The reason is obvious, for amongst the ever-changing faces of the sand-hills, the mouth of the hole may be filled up; when this happens, the toad has only to follow his nose, and can then work his way out with little difficulty.

The fertilization, deposition, and quantity of spawn are as in the common species; though the pools in which the spawn is laid are usually devoid of water-plants, and consequently the spawn sinks to the bottom. The development of the embryo and larva is more rapid than in the common species. I repeatedly visited the pools amongst the sand-hills at Wallasey, and found that the adult form was attained 39 days after the hatching of the egg. The spawn is usually laid at the end of May, or early in June. The young tadpoles lost their gills on the fourth day; the hind legs appeared first, and six days

later the fore legs were developed. Of the pools which I was observing, several dried up before the spawn had fully developed, and from this we may learn the reason of the more rapid development of the young of this species.

Those individuals possessing an inherited tendency to mature more rapidly than the average could alone survive and reproduce their species, in the peculiar situations which the Natterjacks affect. As a proof that this tendency to a more rapid development is hereditary, and not merely dependent on the temperature or depth of the water in which they are laid, I may mention that the development was equally rapid in the deepest and consequently coolest pool.

As an illustration of the enormous destruction of embryonic and larval life, in the circumstances under which Natterjacks exist, owing to the great tendency of the smaller pools, in sandy places, to dry up in the summer months, I found that one small pool, which had shrunk to about 6 ft. by 4 ft., by 6 in. deep in the middle, was positively black with tadpoles. Having counted a few square inches, we estimated that the pool contained at least 30,000 tadpoles; a few days later, this pool was completely dried up, and all the tadpoles had perished.

In their wild state, worms don't form much of their diet, as they will only take them when nothing else is forthcoming. They take none but living food, whose faintest movement is quite sufficient to catch the quick eye of the Natterjack. These toads are wild, and almost untamable; mine not at all reciprocating the kindly feeling shown to them. Out of some eighteen specimens, only four would feed from the hand; although, occasionally, if a particularly tempting morsel is held in the fingers, a wild one will rush at it, seize it, and then be lost amongst the sand. If anyone wishes to see this toad in all its activity, let him take a lamp and visit the sand-hills in the evening, more especially in the neighbourhood of some pool (in the early summer in the breeding season, the locality may easily be found by the croaking of the males), and he will be astonished at the numbers round about him. In the daytime he may search in vain, unless he happens to know something of the habits of this creature. It is sometimes called the 'Sand-Toad,' an appropriate name, as it is generally found in sandy localities, and its colour is so much like that of sand, that, when seen at rest, it is difficult to detect it. It might seem probable that the dorsal line would make it conspicuous; this is not so, however, for the yellow line may be easily mistaken for a bit of the dry grass which is so common amongst the sand-hills. On July 23rd, 1887, when . . . at Formby,

I found the Natterjacks in their holes amongst the sand-hills; they are abundant there, and owing to their loud croaking are locally known as 'Formby Organs.' Mr. J. A. Jackson has also sent me some from Garstang, amongst which were two small ones, in their second year, . . . as well as some born this year.

[The whole paper is replete with interesting details as to the habits and life-history of the British Frogs and Toads, but we content ourselves with reproducing Mr. Greening's table of the most striking characteristics of these animals :]

Rana temporaria (Common Frog). Skin smooth. Length of body, $2\frac{3}{4}$ in. to 3 in. Fore legs $1\frac{1}{2}$ in. long. Hind legs 4 in. long. Fore feet not palmated. Hind feet much palmated. Legs formed for jumping and swimming. Head triangular, snout pointed. Dorsal ground colour very variable—from light yellow to dark green, from pale rufous to brick red, from light to dark brown. Ventral surface pale yellow to light green, irregularly marked with brown. Upper surface of legs persistently barred and spotted with brown. Dark brown patch running from eye to shoulder; this is a constant feature in this species. Two well-marked dorsal ridges.

Rana esculenta (Edible Frog). Skin smooth, or slightly tuberculated on back. Length of body, 3 in. to $3\frac{1}{4}$ in. Fore legs $1\frac{1}{4}$ in. long. Hind legs $3\frac{3}{4}$ in. long. Fore feet not palmated. Hind feet much palmated. Legs formed for jumping and swimming. Head triangular, snout pointed. Dorsal ground colour generally green, variable to brown, with irregular black splashes along the dorsal ridges; well-marked median dorsal line. Ventral surface milk white, spotted or marbled with greenish brown. Upper surface of legs splashed with black, and sometimes barred.

Bufo vulgaris (Common Toad). Skin warty, densely covered with tubercles. Length of body, 3 in. to $3\frac{1}{4}$ in. Fore legs $1\frac{1}{2}$ in. long. Hind legs 3 in. long. Fore feet not palmated. Hind feet palmated. Legs formed for running and swimming. Head rounded, snout blunt. Dorsal ground colour, ashen grey to dark brown, or from dull olive green to dirty yellow; irregularly spotted over back and legs with darker markings, sometimes forming irregular bands. Ventral surface greyish green, speckled with brown.

Bufo calamita (Natterjack Toad). Skin warty, densely covered with tubercles. Length of body, $2\frac{1}{4}$ in. to $2\frac{1}{2}$ in. Fore legs $1\frac{1}{8}$ in. long. Hind legs $2\frac{1}{2}$ in. long. Fore feet not palmated. Hind feet palmated. Legs formed for running and swimming. Head rounded, snout blunt. Dorsal ground colour yellowish brown, suffused with olive, and marbled with black; well-marked dorsal line of brimstone yellow colour. Ventral surface greenish white, marbled with black.

A frog can at once be distinguished from a toad by its smooth skin, and jumping powers. The common can be distinguished from the edible frog by the presence of the brown patch running from the eye to the shoulder, and by the absence of the dorsal line.

The common toad can be distinguished from the natterjack by the absence of the yellow dorsal line, which is a constant feature in the natterjack, and also by its sluggish movements.

In the larval form, the common frog may be distinguished by its being speckled all over with gold-coloured spots. The edible frog larva differs from that of the common frog in being free from gold-coloured spots, and in having its ground colour greenish (instead of brown), marbled with olive. The toads are of a uniform blackish brown. The natterjack tadpole can be distinguished from that of the common toad, by its denser black colour, and smaller size.

NOTE—PRE-HISTORIC ARCHÆOLOGY.

A Lake-Dwelling in Lancashire.—A few years ago Mr. T. Boynton discovered a lake-dwelling at Ulrome, in Holderness, the first of the kind found in England. I have just had an opportunity of exploring the works, which have been for some time in progress, for diverting the course of the Ribble at Preston, in Lancashire, and constructing large docks in the marshes which border on the river-course. The excavations are at present at a standstill, and will probably remain so for a considerable time. The sections exposed, 30 ft. deep, are extremely interesting. Every trace of boulder clay, which covers the Fylde elsewhere to a great depth, was ages ago removed by the river, and on the bare new Red Sandstone were deposited thick beds of gravel and sand, full of estuarine shells. In these gravels, at various depths, lie scores of huge blackened trunks of trees, with their ends mostly in the same direction—down-stream. There is no trace of soil; they have all, without exception, been drifted into their present position—a position which does not appear to have been altered by any change in the river's course since the gravels were laid down. Whilst tracing the line of trees I caught sight of some piles standing vertically in the gravel beds, and on closer examination found that they had been driven in to a depth of from 8 ft. to 15 ft. The ends were roughly pointed. For a depth of 2 ft. or 3 ft. at the top a quantity of brushwood had been laid horizontally between the piles, so as to make a solid and firm floor. The length of the floor was about 17 yds., but I could not ascertain the width beyond 7 yds., as evidently portions of the platform had been removed in the excavations. The appearance was exactly similar to the upper platform discovered by Mr. Boynton in Holderness, and I have little hesitation in assigning it to a lake-dwelling. The structure was erected in a marsh, distant about 100 yds. from the present bed of the river. There were no traces of weapons or implements of any kind, but this may be accounted for by the fact that the navvies had no instructions, and no one in authority noticed what they were destroying. In the area of the unfinished dock, however, as I learn from the curator of the Preston Museum, the Rev. J. Shortt, no less than 52 pairs of antlers of the Red Deer have been found, 43 heads of the Urus, 14 human skulls of the type found in our tumuli, two ancient canoes hollowed out of the trunks of trees, and a solitary bronze spear-head. No flint or pottery seems to have been discovered. Mr. Shortt has kindly promised to have the section photographed before the works are resumed; but it would be more satisfactory if the piles and brushwood could be carefully examined by competent persons, instead of being left to casual demolition. Doubtless there were many lake-dwellings once in this country, as in Switzerland, but so far, with one or two exceptions, they have escaped notice.—E. MAULE COLE, Wetwang, near York, October 4th, 1888.

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Papers and records published with respect to the Natural History and Physical Features of the North of England.

CRYPTOGAMIC BOTANY,
1886 and 1887.

IN the preparation of the Botanical Bibliography the Editors have obtained the assistance of Mr. P. Fox Lee, Dewsbury, who has most kindly consented to examine botanical literature, and to arrange the botanical bibliography for publication. The present is the first instalment which has had the benefit of his supervision; the second, which will be devoted to the Phanerogamia and the Vascular Cryptogamia of the London Catalogue, is ready, and will appear early in the next year's volume.

It only remains to add that the *Characeæ* are included in this cryptogamic instalment, and that the citations from *The Naturalist* for 1884 to 1887 are included, so as to render this, with former instalments, as complete a record as possible for the years included, 1884 to 1887.

ANON. [not signed].

York S.E.

[Notes made in 1885 by Hull Field Naturalists; *Acidium pimpinellæ* var. *apii* and *Æ. primulæ*]. Nat., Feb. 1886, p. 63.

ANDREW AMORY.

Cheviotland.

Alnmouth Marine Algæ [giving first a List of thirteen Additions to previous list, and then detailed notes of Observations made on various species]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 267-268.

[R. BARNES.]

York N.E., York N.W.

[List of 48 Mosses found near Saltburn and in Cleveland, and of two (*Thuidium blandovii* and *Amblystegium sprucei*) from Gainford and Croft respectively; localities stated for all]. Nat., July 1887, pp. 220-221.

C. H. BINSTED.

Westmorland, Derbyshire.

Barbula squarrosa in Westmoreland [in various places; hitherto not further N. than Derbyshire]. Nat., Jan. 1886, p. 18.

C. H. BINSTED.

Westmorland.

Some Rare Mosses in Westmorland [*Grimmia anodon* B. & S., *G. commutata* Hüb., *G. anomala* Hampe, *G. hartmanni*, *Bryum mühlenbeckii* B. & S., *Cinclidium stygium* Sw., *Hylocomium umbratum* Schreb., *H. squarrosus*, *H. loreum*, and *H. splendens*]. Nat., March 1887, pp. 65-66.

HENRY BOSWELL.

Isle of Man, Westmorland, Furness, Derbysh.

Notes on Rare British and Irish Mosses [including *Dicranella curvata* Hedw., new to Isle of Man (Boyd); *Grimmia commutata* Hueb., rocks near Rydal Water (Binstead); *G. stirtoni* Schpr. and *G. anomala* Hampe near Windermere (Binstead); an intermediate form from Derbyshire between *Zygodon viridissimus* and its var. β *rupestris* Lindb.; and *Hypnum callichroum* Brid. and *Hylocomium umbratum* Schreb. found in Westmorland by Binstead]. J. of Bot., April 1887, xxv. 111-112.

J[AMES]. C[ASH].

Yorkshire.

Barbula princeps (a query) [as to where in Yorkshire and by whom it was discovered]. Nat., Dec. 1884, p. 114.

Dec. 1888.

JAMES CASH.

York S.W., Derbyshire, Cheshire, Lanc. S.

The Early Botanical Work of the late William Wilson [in York S.W., Derbyshire, Cheshire, Lanc. S., etc.: in Seal Bark, Yorkshire, were noted *Jungermannia taylori*, *J. reptans*, *J. trilobata*, *Weissia recurvata*, *W. striata*, *Bryum marginatum*, *B. elongatum*, *Hypnum commutatum*, *Didymodon flexifolius*, *Hyp. flagellare*, *Diphygium foliosum*, *Tortula tortuosa*, and *Splachnum minus*; in Staley Brushes, *Disclidium nudum*, *Dicranum squarrosum*, *D. flexuosum*, *Hyp. stramineum*, *Jungermannia minuta*, and *Hyp. aduncum* v. *revolvens*; *Weissia nuda*, *Orthotrichum riviculare*, *Fontinalis equanota* and *Phascum serratum* at Stalybridge, *Leskea polycarpa* and *Tetraphis ovata* near Middleton, *Phascum crispum* and *Ph. axillare* near Hulme, *Jungermannia tomentella* near Cotterill Clough, *Encalypta streptocarpa* at Youlgreave, etc., *Cynodontium bruntoni*, *Grimmia trichophylla*, and *Schistoclea asmundacea*, at Rowter Rocks, *Seligeria pusilla*, *Brachyodus trichodes*, *Bartramia gracilis*, *Jungermannia pubescens*, *J. hyalina*, *J. pusilla*, *Tortula tortuosa*, *Didymodon flexifolius*, *Mnium serratum*, *M. rostratum*, *Seligeria acutifolia*, and *S. pusilla* at Buxton, and *Hyp. rugosum* in Dove-dale]. Nat., June 1887, pp. 181-190.

W. EAGLE CLARKE.

York S.W.

Cynophallus caninus Fr., near Leeds [at New Wortley; occurs also at Saltaire and Bingley]. Nat., Nov. 1886, p. 332.

T. D. A. COCKEREILL.

Cheshire.

A September Walk through . . Cheshire . . [*Ecidium tussilaginis* noted between Chelford and Congleton, Sep. 11th, 1885]. Nat., Feb. 1886, p. 57.

[M. C. COOKE.] York Mid W., York N.E., Cumbrld., Westmrd., Furness.

New British Fresh-water Algæ [*Merismopedia?* *paludosa*, bog-pools, Loughrigg; *Notos hyalinus*, in a bog-pool, Loughrigg Fell; *Pediastrum compactum*, bog-pools, Loughrigg; *Meteorus? neaumontis*, duck-pond, Neaum Crag, Skelwith Bridge; *Omphocoma nordstediana*, Sirensall Common, York]. Grevillea, March 1886, xiv. 97-99. [*Mesotanium degreyi* (see Turner, Nat. 1886, 32, t. f. 1.); *Tetmemorus penicoides*, among *Sphagnum*, Furness Fells, Lancashire; *Micrasterias cornuta*, stream between Codale and Stickle Tarns, at 1,800 ft. alt.; *Euastrum ornithocephalum*, bog-pool, Loughrigg; *E. hundellii* among *Sphagnum*, Loughrigg; *Cosmarium wittrockii*, *C. elongum*, bog-pools, Loughrigg; *Xanthidium spinulosum*, stream between Codale and Stickle Tarns; *Scaurastrum bulbosum*, stream flowing out of Loughrigg Tarn; *S. tuberculatum*, bog-pool, Loughrigg]. Grevillea, June 1886, xiv. 121-123.

M. C. COOKE.

Cumberland, Lanc. S. and W., York N.E., Cheviotland.

British Sphæropsidææ. Provisional List of Species hitherto found in the British Islands [*Septeria pubigravie* Lasch., on *Agopodium*, Whitehaven; *S. eryngii* Pass., on *Eryngium*, near Liverpool; *Polystigmia rubra* Desm., on leaves of *Prunus domestica* and *P. spinosa*, Thirsk; *Leptothyrium aserinum* Berk. on *Aster tripolium*, Fleetwood; *Leptostroma scirpinum* Fr. on *Scirpus*, etc., *L. filicinum* Fr. on *Pteris*, *L. herbarum* Link. on herb stems, and *L. ignea* Fr. on *Spirea ulmaria*, Berwick]. Grevillea, March 1886, xiv. 101-108. [*Glaucosporium ribis* Lib., on red-currant leaves, Lancashire; *Myxosporium croceum* Pers., on branches, Carlisle; *Libertella rosea* Desm., on rose twigs, Berwick; *Melanconium elevatum* Corda, on oak branches, Langridge]. Grevillea, June 1886, xiv. 123-128. [*Phyctena johnstonii* B. & Br., on ragwort, Berwick]. Grevillea, June 1887, xv. 103-106.

M. C. COOKE.

York N.E., Cumberland.

New British Fungi [*Agaricus (Pluteus) pellitus* Pers., Scarborough]. Grevillea, March 1886, xiv. 113-128. [*Agaricus (Peathyra) gyroflexus* Fries, Scarborough; *Lactarius helvus* Fries and *Russula expallens* near Carlisle]. Grevillea, Dec. 1886, xv. 39-43. [*Agaricus (Panæolus) scitulus* Massee, *Continarius (Phlegmarium) atro-virens* Kalch., and *C. (Hydrocybe) brombelii* Fr.—all from Scarborough by G. Massee]. Grevillea, March 1887, xv. 65-67. [*Agaricus (Myrcena) flavipes* Quelet, on stumps, Whitby:

Naturalist,

Ag. (Clitopilus) stramineipes Massee, on the ground, Carlisle (Dr. Carlyle); *Cortinarius (Phlegmacium) herpeticus* Fr., in woods, near Carlisle (Dr. Carlyle); *C. (Dermocybe) lepidopus* Cooke, in heathy ground, near Carlisle (1887), Scarborough; *C. (Telamonia) rubellus* Cooke, in swampy places near Carlisle (Dr. Carlyle); *C. (Hydrocybe) tortuosus* Fr. in damp pine woods, Scarborough; *C. (Hy.) antimachus* Britz., in grassy places, Carlisle (Dr. Carlyle); *C. (Hy.) bicolor* Cooke, on the ground in mixed woods near Carlisle; *Lactarius (Russularia) cremor* Fries, in woods, Carlisle (Dr. Carlyle); *Chaetopharia pileo-ferruginea* Crouan, on roots of *Calluna* near Carlisle (Dr. Carlyle); *Ostreichia americanum* Duby Hyst., on pine wood, Scarborough (G. Massee); *Tubularia conorum* Cke. & Mass., on fir cones, Carlisle (Dr. Carlyle). Grevillea, Dec. 1887, xvi. 42-49.

M. C. COOKE.

York N.E.

Agaricini [*Agaricus (Panaeolus) vitulus* (Massee), Scarborough]. Grevillea, Sep. 1887, xvi. 209-224.

M. C. COOKE.

Derbyshire, York S.W. and N.E., Cumberland, Lanc. S.

British Hyphomycetes. A Catalogue of Known Species [*Oospora aurantia* Cooke, on spent hops, Burton-on-Trent; *Monilia racemosa* Pers., on rotting substances, Halifax; *Cephalosporium acremonium* Corda, on ———, Scarborough; *Trichoderma viride* Pers., on wood and bark, Carlisle. Manchester; *Rhizotrichum decipiens* Cooke, on bark, etc., Carlisle; *Botrytis argillacea* Cooke, on wood, Carlisle; *Bot. (Polyactis) vera* Fr., on *Polygonum zeruolor*, Halifax; *Acrostalagmus cinnabarinus* Corda, on leaves, branches, etc., Liverpool; *Arthroderma rosea* Massee, on branches, Scarborough]. Grevillea, Dec. 1887, xvi. 57-65.

J. M. CROMBIE. Westmorland, Derbyshire, Northumberland, Cumberland.

Recent Additions to the British Lichen-Flora [*Goniomenia compactum* (Ag.), *Ephedra martinalei* Cromb., *Collema indivisus* Nyl., *Lecanora decincta* Nyl., *Lecidea periplaca* Nyl., *L. tenebrina* Nyl., and *L. variatella* Nyl. have Westmorland localities assigned, *Lecanora conizaeoides* Nyl. is from Buxton, Derbyshire (Holl.), *L. subradiosa* Nyl. from walls, East Allendale, Northumberland (Rev. W. Johnson), *Lecidea percontigua* Nyl. from rocks, Whitehaven, Cumberland, and *L. plumbea* Anzi, is parasitic on the thallus of *Corticaria plumbea* at Burrowdale, Keswick, Cumberland]. J. of Bot., July 1885, xxiii. 194-196.

THOS. DENNIS.

York S.E., Linc. N.

Æcidium pimpinellæ var. *apii* [near Cleethorpes and near Hedon; *Æ. stativæ* and *Cyrtogus lefigoni* also noted at Cleethorpes]. Nat., Aug. 1884, p. 21.

D. EMBLETON.

Durham, Westmorland, York N.W.

A Catalogue of the Place-Names in Teesdale [including some derived from 'Moss'; see pp. xiii. and 140 for discussion of the word]. Nat. Hist. Trans. of Northd., Durh., and Newc., vol. ix. part i. (1887), pp. i.-xviii. and 1-223.

[WM. FOWLER.]

York Mid W.

The Yorkshire Naturalists' Union at Blubberhouses [26th Sept., 1885; the fungi noted included *Agaricus rutilans*, *A. umbelliferus*, *Russula nigricans*, *R. adusta*, *Boletus ruber*, *B. chrysenteron*, *Lactarius rufus*, and *Peziza aurantia*]. Nat., Nov. 1885, p. 381.

[WM. FOWLER.]

York S.W.

The Yorkshire Naturalists' Union at Askern [20th May, 1886; *Morchella esculenta*, *Pluteus chrysophæus*, and absence of Truffles noted]. Nat., June 1886, p. 190.

[HILDERIC FRIEND.]

York S.W.

Yorkshire and Nottinghamshire Naturalists at Anston Stones [30th April, 1885; micro-fungi observed—*Æcidium compositarum* v. *lapsani*, *Æ. ranunculacearum*, *Æ. urticae*, *Uredo potentillarum*, *Puccinia anemonis*, *P. umbelliferarum*, *Trichostema lapidum*, *Erysiphe graminis*, *Puccinia schleideniana*, *P. parvifolia*, *P. ficariae*, *Pretomyces arif*, and *Uromyces ficariae*]. Nat., June 1885, p. 261.

Dec. 1888.

HILDERIC FRIEND.

Derbyshire, Notts., York S.W.

The Micro-Fungi of North Notts. [recording three species of *Rastelia*, one of *Peridermium*, and 22 of *Ecidium*, for which stations are recorded, some of which, however, are in Derbyshire and Yorkshire]. Sci. Goss., Aug. 1886, pp. 170-171.

HILDERIC FRIEND.

Notts.

Spots on Sycamore-Leaves [referred to *Capnodium footii* Berk., a fungus abundant in Sherwood Forest]. Sci. Goss., Aug. 1886, p. 190; but see a number of letters in Sep. 1886, p. 215.

HILDERIC FRIEND.

Notts., York S.W., Derbysh., Chesh.

Notes on the Fungi of North Notts. [numerous species mentioned, with localities; and a few references to other counties]. Trans. and 34th Ann. Rep. of Nottingham Nat. Soc. for 1886 [pub. 1887], pp. 44-48.

W. GAIN.

Notts.

Hydnum coralloides in Notts. [at Ossington, 1883 and 1884]. Nat., Jan. 1885, p. 138.

W. A. GAIN.

Notts.

A New British Alga [*Hildenbrandia rivularis* on stones in the Poulter, a tributary of the Idle]. Sci. Goss., July 1887, p. 165 [in the Aug. number, p. 214, Mr. W. Barwell Turner points out that it has already been recorded as British, by Kützinger and by Carter].

E. GROVE.

York Mid W.

Surirella elegans, etc., in West Yorkshire [in the Skell near Fountains Abbey, Sep. 1884, with *Navicula reinhardti* and *N. trochus*]. Nat., May 1885, p. 232.

W. B. GROVE.

York S.W., Cheviotland.

New or Noteworthy Fungi. Part III. [*Rhabdospora pleosporoides* Sacc., on old stems of *Rumex acetosa* from nests of terns, Farne Islands, in the collection of Mr. R. W. Chase]. J. of Bot., May 1886, xxiv. 136; also see Midl. Nat., Oct. 1885, p. 298. Part III. [*Trichosporium murinum* Sacc., on dead wood, Steeton, Yorks., Nov. (H. T. Soppitt)]. J. of Bot., July 1886, xxiv. 201.

[W. B. GROVE.]

Yorkshire.

[Arthrobotryum stilboideum] from Yorkshire, collected by H. T. Soppitt]. Midl. Nat., Feb. 1886, ix. 59.

JAMES HARDY.

Northumberland.

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885. . . . Rothbury [24th June: *Conjerva rivularis* common in Coquet, and used as and called 'Ladies' Soap' (p. 39); *Sphaerophoron coralloides*, *Borreria ciliata*, *Leucobryum glaucum* (p. 40): *Gymnomitrium concinnatum*, *Dicranum fuscescens*, *Andracea rupestris*, *Gyrophora proboscidea* (p. 42)]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 39, 40, and 42.

C. P. HOBKIRK.

York S.W.

Physcomitrium pyriforme [near Thornhill Edge]. Nat., Aug. 1884, p. 21.

C. P. HOBKIRK.

York S.W.

Freshwater Algæ near Dewsbury [*Spirogyra porticalis* v. *quinina*, *S. flavescens*? *Mesocarpus*, *Prasiola crispa*, *Chlorococcum*, *Cladophora glomerata*, and *Draparnaldia plumosa* noted]. Nat., June 1885, p. 259.

E. M. HOLMES.

Cheviotland.

Algæ Britannicæ Rariores Exsiccatae. Fas. III. [*Lynghya luteo-fusca* J. Ag., Berwick-on-Tweed (E. Batters)]. Grevillea, June 1887, xv. 115-116.

G. A. HOLT.

Derbyshire.

A British Moss new to Science [*Thamnum angustifolium* Holt, sp. nov., found sparingly on shady limestone rocks, associated with *T. alopecurum*, in Ravensdale, Derbyshire, May 1883 and 1884]. J. of Bot., March 1886, xxiv. 65 and tab. 265.

- W. JOHNSON. Durham.
A New British Lichen [*Lecanora weardalensis* Johns., occurring on sandstone in sub-alpine places, rare, Lanehead, Weardale, Durham, 1879]. Grevillea, March 1886, xiv. 91.
- WILLIAM JOHNSON. Cumberland.
Lichenology [with notice of *Solorina saccata* at Alston Moor, East Cumberland, and details of its station there]. Wesl. Nat., June 1887, i. 115.
- P. FOX LEE. York S.W.
Chara fragilis var. fulcrata in Yorkshire [a form not mentioned in the latest edition of the Lond. Cat. (1886). It is a monœcious plant, characterised by very short bract-cells and rudimentary stipulodes, resembling the fertile plant of *C. connivens*, a dioecious *Chara*]. Nat., Sept. 1887, p. 272.
- F. ARNOLD LEES. York N.E.
Yorkshire Naturalists at Gormire Lake and Thirkleby Park [mosses noted were *Sphagnum papillosum* type, *Seligeria recurvata*, *Brachyodus trichodes*, and *Grimmia trichophylla*, with the fungus *Entoloma sericea*]. Nat., Aug. 1887, p. 239.
- F. ARNOLD LEES. York N.W.
Yorkshire and Westmorland Naturalists at Sedbergh [Aug. 1st, 1887; mosses noted, *Dichodontium flavescens*, *Dicranum palustre*, *Didymodon cylindricus*, *Grimmia trichophylla*, *G. commutata* (this proved erroneus, see Nat., Oct. 1887, p. 294), *Orthotrichum saxatile*, *O. rupestre*, *Plagiothecium sylvaticum*, *Gymnostomum commutatum*, *Trichostomum crispulum*, *Barbula revoluta*, *Blindia acuta*, *Bryum filiforme*, *Mnium stellare*, *Polytrichum formosum*, *Hedwigia ciliata*, *Heterocladium heteropterum*, *Neckera pumila*, and *Hynum eugyrium*; Hepatics, *Lejeunea calcarea*, *Madotheca lævigata*, *Jungermania barbata*, *J. riparia*, *J. bantriensis*, *J. cordifolia*, *Nardia emarginata*, *Trichocolea tomentella*, *Mylia taylori*, and *Metazeria conjugata*; Lichens, *Collemodium plicatile*, *Parmelia subaurifera*, *Lecanora dicksonii*, and *Pertusaria lactea* (with notes on the species of *Cladonia*, *Parmelia*, and *Lecanora*); Algæ, *Edogonium princeps*, *Chlorococcum frustulosum*, *Hormiscia bicolor*, *Ceratoneis arcus*, *Mesotænium chlamydsosporum*, and *Encyonema caespitosum*]. Nat., Sep. 1887, pp. 281-282.
- F. A. LEES. York N.W.
A Mythical Moss.—Correction of Error [*Grimmia commutata* at Cautley recorded in error for var. *commutata* of *Barbula curvirostris*; the source of error explained]. Nat., Oct. 1887, p. 294.
- H. W. LETT. Nottinghamshire.
New British Algæ [mentions the Fresh-water Alga *Hildenbrandia rivulari*. Lieber, found on quartz pebbles in the river Poulter, a tributary of the Idle, near Retford, hitherto unrecorded for the British Isles]. Grevillea, June 1887, xv. 121.
- GUSTAV LIMPRICHT. Cumberland.
Description of a Species of *Andreæa* new to Science (*Andreæa commutata* Limpricht) [Borrowdale, Cumberland, and rocks near Buttermere; details given]. Nat., Dec. 1884, pp. 113-114.
- J. E. LORD. Lanc. S.
Notes on the Rotifera. (A Prolific Pond.) [at or near Rawtenstall; in addition to the rotifers the genera *Surirella*, *Encyonema*, *Synedra*, and *Melosira* of Diatoms; *Pandorina*, *Cosmarium*, *Closterium*, and *Pediastrum* of other Algæ; and *Vaucheria*, *Spirogyra*, *Rivularia*, and *Draffarnaldia* of Confervæ, are cited]. Sci. Goss., Aug. 1887, p. 185.
- JOSEPH A. MARTINDALE. Westmorland.
Additions to the Lichen Flora of Westmorland [viz. *Calicium roseidum* Flk., *Lecidea pilularis* Körb., *L. plumbina* (Anzi), *L. declinascens* Nyl., *L. rubescens* Th. Fr., *L. obturbans* Nyl., *L. acutula* Nyl., *Schizoxylon corticola* (Fr.), and *Platygrapha periclea* (Ach.), with localities stated]. Nat., Feb. 1886, p. 49.
- JOSEPH A. MARTINDALE. Westmorland.
Descriptions of New British Lichens [*Lecidea obturbans* Nyl. and *L. acutula* Nyl., both from Westmorland]. Nat., April 1886, p. 101.

- JOSEPH A. MARTINDALE. **Westmorland, Cumberland.**
New British Lichens [from Westmorland and Cumberland; *Parmelia isidiotyla* Nyl. and *Pannularia lepidiota* (Smrft.) Nyl.]. Nat., Sep. 1886, p. 279.
- JOSEPH A. MARTINDALE. **Westmorland, Lanc. W., Cumberland, York N.W.**
The Lichens of Westmorland [121 species, with a notice of *Collema isidioides* at Warton Crag, Lancs., and other species noted for adjoining parts of Cumberland and Yorkshire; *Thamnobia vermicularis*, *Parmelia mougeotii*, *P. isidiotyla*, and *P. lanata* from Cumberland]. Nat., Oct. and Nov. 1886, pp. 317-324; and Feb. 1887, pp. 47-54.
- JOSEPH A. MARTINDALE. **Westmorland.**
New Westmoreland Lichens [*Lecanora flavocitrina* Nyl., and *L. crenulatella* Nyl.]. Nat., Dec. 1886, p. 374.
- JOSEPH A. MARTINDALE. **York N.W., Westmorland.**
Sedburgh District Lichens, [a list of 54 species] observed on the occasion of the August Meeting of the Yorkshire Naturalists' Union [including ten additions to the West Yorkshire Flora, and note of Westmorland locality for *Lecidea periplaca* Nyl.]. Nat., Sep. 1887, pp. 285-287.
- JOSEPH A. MARTINDALE. **Yorksh., Cumberland, Linc. N., Westmorland.**
Notes on British Lichens [discussion as to *Cladina rangiferina* and *C. sylvatica*; as to the *Parmeliæ* of the *olivacea* group, of which there are eight British segregates; and as to the difficulty of apportioning the old local records for the aggregate species]. Nat., Oct. 1887, pp. 295-299.
- JOSEPH A. MARTINDALE. **Cumberland, Yorksh., Westmorland, Isle of Man.**
Notes on British Lichens: *Lecanora murorum* and its more immediate allies [discussed at length; Northern localities stated are: *L. dissidens* Nyl., in Westmorland, *L. lobulata* Smrft., in Westmorland and Isle of Man, *L. murorum* (Hoffm.), *L. decipiens* (Arn.), and *L. tegularis* (Ehrh.) in Westmorland, *L. cirrochroa* Ach., in Westmorland and Cumberland, and *L. xantholyta* Nyl., in Yorkshire and Westmorland]. Nat., Dec. 1887, pp. 355-364.
- GEORGE MASSEE. **York N.E.**
The Yorkshire Naturalists' Union at Helmsley [4th Aug. 1884; mosses noted—*Brachyodus trichodes*, *Philonotis calcarea*, *Hypnum chrysophyllum*, *Eurhynchium striatum*, *Amblystegium confervoides*, *Fissidens pusillus*, and *Limnobia palustre*; fungi—*Pluteus chrysophæus*, *Entoloma nidorosus*, *Russula heterophylla*, *R. vitellina*, *Gomphidius stillatus*, *Eccilia carneogriseus*, *Crepidotus mollis*, *Polyporus varius*, *Boletus satanas*, and *B. flavus*]. Nat., Sep. 1884, p. 41.
- [GEORGE MASSEE.] **York S.E.**
Fungus Foray at Selby [a total of 134 species observed, amongst them being the following—*Torrubia ophioglossoides* parasitic upon *Elaphomyces granulatus*, *Cortinarius cinnabarinus*, *Agaricus nebularis*, *Lactarius deliciosus*, *Gomphidius viscidus*, *Russula alutacea*, etc.]. Nat., Jan. 1885, pp. 140-141.
- GEORGE MASSEE. **York N.E.**
Marine Algæ of the Scarborough District [a full list, annotated, of 110 species, of which *Chlorochytrium immersum* is described as new to science]. Nat., Aug. 1885, p. 300-306.
- [GEO. MASSEE.] **York N.E.**
The Yorkshire Naturalists' Union at Whitby [3rd Aug. 1885; *Acididium periclymeni* noted]. Nat., Oct. 1885, p. 349.
- York Mid W., York N.E., York S.W., Lanc. S., Derbysh., G. MASSEE. Cumberland, Chesh., Cheviotland, Northumberland S.**
British Pyrenomycetes (a preliminary list of known species) [*Xylaria corniformis* Mont., on fallen branches, Speke Hall, Lancashire; *Thamnomycetes hippotrichoides* Sow., on cocoanut fibres, Scarborough; *Hypoxylon marginatum* Schw., on dead wood, Chatsworth; *Phyllachora pterides* Reb., on fronds of *Pteris aquilina*, Wakefield; *Rhytisma andromedæ* Fr., on living

leaves of *Andromeda polifolia*, Cheshire; *Stigmatea nicholsoni* Cke., on leaves of Portugal laurel, Newcastle; *S. ranunculi* Fr., on leaves of *Ranunculi*, Berwick]. Grevillea, Dec. 1886, xv. 33-39. [*Valsa ambiens* var. *coryli* Sacc., on hazel, and var. *populina* Fekl., on poplar at Thirsk]. Grevillea, March 1887, xv. 68-72. [*Pseudovalsa lauciformis* Fr., on birch, Scarborough; *P. convergens* Tode, on *Rubus*, Berwick (Johnstone); *Eutypa spinosa* Pers., on branches, Scarborough; *E. ulicis* (Fr.), on furze, Langridge]. Grevillea, June 1887, xv. 116-121. [*Diaporthe sarothamni* Awd., on *Sarothamnus*, and *D. lirella* M. & N., on *Spiraea ulmaria*, both at Scarborough]. Grevillea, Sep. 1887, xvi. 12-14. [*Cucurbitaria berberidis* (P.), on dead branches of barberry, Scarborough; *C. laburni* Pers., on dead branches of laburnum, Scarborough, Carlisle; *C. spartii* N., on *Sarothamnus*, Scarborough, Cumberland; *C. rhamni* N., on *Rhamnus frangula*, York; *Byssosphaeria thelena* Fr., on wood, etc., Scarborough; *B. innumera* B. & Br., on wood, Carlisle; *B. phaeostroma* Mont., on wood, Carlisle, Scarborough; *Chetosphaeria pileo-ferruginea* Crouan, on stems and roots of *Calluna vulgaris*, Carlisle; *Lasiothraea ovina* Pers., on dead wood, Scarborough; *L. membranacea* B. & Br., on wood, Langridge; *L. racodium* Pers., on wood, Scarborough; *Venturia ilicifolia* Cooke, on holly leaves, Thirsk; *L. johnstoni* B. & Br., on *Epilobium angustifolium*, Berwick]. Grevillea, Dec. 1887, xvi. 34-39.

CHARLES T. MUSSON.

Notts.

Luminous Wood [part of a root of hawthorn (*Crataegus oxyacantha*), the luminosity thought to be due in some measure to the presence of the mycelium of a fungus]. Nat., Sep. 1885, pp. 326-327.

WM. NARRAMORE.

Cheshire, Lanc. S.

Fresh-water Algæ [*Tetraspora gelatinosa* on the Cheshire side of the Mersey; and *Apicystis brauniana* in the pond in the middle of a field at Broadgreen, Liverpool]. Wesl. Nat., July 1887, i. 141.

M. H. ROBSON.

Cheviotland, Northumberland S.

Additions to the Local Fauna and Flora, with Remarks on some New Habitats, etc. [*Uvella* noted as found in a pool on Nuns Moor; *Nitella*—probably *N. flexilis*—observed in 1874 on Newcastle Town Moor, and found in 1883 in Crag Lough (new to Northumberland); *Nostoc*, *Batrachospermum moniliforme*, *Chetophora elegans*, *Draparnaldia glomerata*, *Fontinalis antipyretica*—all found on Newcastle Town Moor; *Volvox globator* recorded from three localities; and *Chetophora endivifolia* at Sgley Field, Lemington]. Nat. Hist. Trans. Northumberland, Durh., and Newc., viii. 185-189 (1884).

I. of Man, Derbysh., Furness, 'Lake district,'

Lanc. S., Lanc. W., Chesh.

THOMAS ROGERS, Sec.

Manchester Cryptogamic Society [*Hedwigidium imberbe* in the Lake district; *Philonotis rigida*, Isle of Man; *Lejeunea calcaria*, Miller's Dale; *Coscinodon cribrosus*, Coniston, exhibited]. Nat., Aug. 1884, p. 21. [Three notes—*Tortula princeps* (Miller's Dale); *Trichostomum flavovirens* (St. Ann's-on-Sea and Southport); and *Brachythecium albicans* (Southport) noted]. Nat., June 1885, p. 259. September 21st, 1885 [*Gymnostomum rostellatum* and *Physcomitrium sphericum* from Mere, Cheshire, exhibited]. Nat., Feb. 1886, p. 60. January 18th, 1886 [detailed notes by G. A. Holt, on his new species *Thamnum angustifolium* from Derbyshire; and on *Coscinodon cribrosus* at Coniston]. Nat., April 1886, p. 100. April 19th, 1886 [note by G. A. Holt concerning *Thuidium recognitum* and *Trichostomum crispulum* var. *nigro-viride* from Monk's Dale, the latter new to Derbyshire, and *Barbula hornschiuchiana* at Miller's Dale]. Nat., July 1886, p. 212.

M. B. SLATER.

York Mid W.

Mosses, [Hepaticæ,] etc., at Sherburn-in-Elmete [June 2nd, 1884: *Jungermania turbinata*, *Leptobryum pyriforme*, *Anisothecium rubrum*, *Hypnum resupinatum*, *H. chrysophyllum*, *Rhynchostegium murale*, *Zygodon viridissimus* var. *rupestris*, *Tortula aloides*, and *T. hornschiuchiana*; localities stated]. Nat., Sep. 1884, p. 36.

M. B. SLATER.

York S.W.

Mosses and Hepatics gathered on the Askern Excursion, May 20th, 1886 [*Barbula muralis* var. *incana*, *B. ambigua*, *Funaria hygrometrica*, *Webera*

Dec. 1888.

nutans, *Anium rostratum*, *M. punctatum*, *Homalothecium sericeum*, *Campothecium lutescens*, *Eurhynchium praelongum*, *Rhyncostegium murale*, *Amblystegium serpens* and three varieties, *A. radicale*, *Campylium chrysophyllum*, *Cratoneuron filicinum*, and of Hepatics *Lunularia vulgaris*, *Lophocolea heterophylla*, and *L. bidentata* noted]. Nat., July 1886, p. 212.

[H. T. SOPPITT.]

York S.E.

The Yorkshire Naturalists' Union at Pocklington [June 24th, 1885; *Amanita cecilia*, *Stropharia melaspermus* and *Pholiota præcox* noted]. Nat., Aug. 1885, p. 308.

[H. T. SOPPITT and W. WEST.]

York Mid W., York S.W.

Plants of the Bradford District [being records—localised—for *Chara fragilis*, *Urocystis fischeri*, *Lepiota procerus*, *Lentinus procerus*, three Boleti, *Russula nitida*, *Puccinia cirsii*, *P. anthoxanthi*, *Peronospora alta*, three *Lecidea*, *Solorina limbata*, *Peltigera aphthosa*, *Umbilicaria polyphylla*, *Fissidens crassipes*, *Seligeria pusilla*, *Scapania bartlingii*, *S. curta*, *Lejeunea echinata*, *Bazzania trilobata*, *Cylindrocystis diplospora*, *Staurostrum orthostichum*, *Hyalotheca dissiliens*, and *Microsterias crenata*]. Nat., March 1885, p. 178.

H. T. SOPPITT and W. WEST.

York Mid W., York S.W.

Bradford Naturalists' Society—A Year's Botanical Work [Mosses noted, *Tetradontium brownianum*, *Atrichum crispum*, and *Splachnum ampullaceum*; hepatics, *Trichocolea tomentella* and *Jungermania capitata*; fungi, *Coprinus comatus*, *C. atramentarius*, *C. hemerobius*, *Peziza venosa*, *P. leporina*, *Hygrophorus virgineus*, *H. pratensis*, *H. ovinus*, *Marasmius oreades*, *Lentinus cochleatus*, *Panus torulosus*, *Schizophyllum commune*, *Boletus rubinus*, *Cynophallus caninus*, *Chondrioderma umbilicatum*, *Puccinia baryi*; lichens, *Stigonema saxicola*, *Calicium citrinum*, *Urcularia scruposa*, and *Amphiloma lanuginosum*; fresh-water algae, *Palmodyctyon subramosum*, *Hornisia moniliformis*, *Dictyosphaerium ehrenbergii*, *Chroococcus turgidus*, and *Cylindrocystis diplospora*; all with localities noted]. Nat., Feb. 1886, p. 60.

RICHARD SPRUCE.

York Mid W. and N.E.

***Lejeunea holtii*, a new hepatic** from Killarney [in which *L. ulicina* in Upper Wharfedale and at Saltersgate is referred to; and the Cleveland Esk Valley stated as being rich in rare hepatics of European (or arctic) type, as *Harpanthus scutatus*, *Liochlena lanceolata*, *Cephalozia curvifolia*, *C. crenulata*, *C. connexens*, *C. fluitans*, *Nardia compressa*, etc., but not possessing a single *Lejeunea*, except the common *L. serpyllifolia*]. J. of Bot., Mch. 1887, xxv. 74.

G. STABLER.

Westmorland.

Hedwigidium imberbe* and *Grimmia hartmanni found in England [in Kentmere Valley, Westmorland]. Nat., Jan. 1886, p. 15.

[W. BARWELL TURNER.]

York S.E.

The Yorkshire Naturalists' Union at Spurn Point [Sep. 3rd, 1884: *Delesseria sanguinea*, *D. alata*, *Ceramium rubrum*, *C. echinatum*, *Ulva latissima*, *U. lingua*, *Fucus vesiculosus*, *F. serratus*, *F. ceranoides*, *Griffithsia setacea*, *Chrysimenia clavellosa*, *Laminaria digitata*, *L. saccharina*, and *Cladophora rupestris* noted among the algae]. Nat., Nov. 1884, pp. 92-93.

W. BARWELL TURNER.

York Mid W., York N.E.

Notes on Fresh-water Algæ [from Blubberhouses and Strensall]: with descriptions of new species [viz.:—*Mesotenium degreyii*, Blubberhouses, *Onychonema nordstedtiana*, Strensall; list of eight algæ, thirteen diatoms and twelve desmids from Blubberhouses; *Cosmarium regnesi* from Strensall; paper concludes with generalizations on the geological preferences of desmids]. Nat., Feb. 1886, pp. 33-35 and plate 1.

W. BARWELL TURNER.

York N.E., Westmorland.

Notes on Algæ collected at Gormire and Thirkleby, with notice of a New Form [*Docidium truncatum* γ *labiatum* var. nov.; 15 species of algæ, 3 genera of diatoms, and 42 species of desmids, with stations enumerated; *Docidium truncatum* β *crassum* also noted as found last year in great abundance near Bowness, Windermere (Turner)]. Nat., Sep. 1887, pp. 275-276; and erratum, Oct. 1887, p. 290.

- W. BARWELL TURNER. York N.E.
Desmids of Gormire Lake.—**Correction of Error** [in respect of varieties of *Dicidium truncatum* and *D. nodulosum*]. Nat., Oct. 1887, p. 290.
- GEORGE R. VINE. York S.W.
Luminous Wood [the phenomenon observed in firewood composed of beech (*Fagus sylvatica*), elm (*Ulmus campestris*), sycamore (*Acer pseudoplatanus*), and oak (*Quercus robur*), due to presence of fungus mycelium?]. Nat., Oct. 1885, pp. 340-341.
- C. H. WADDELL. Westmorland.
Cortinarius albolivaceus Fr., and **Boletus cyanescens** Bull., near Kendal [in 1886]. Nat., Nov. 1886, p. 332.
- C. H. WADDELL. Westmorland.
Hygrophorus sciophanus Fr. near Kendal [in Oct. 1886, plentifully]. Nat., March 1887, p. 66.
- C. H. WADDELL. Westmorland.
Fungus Crop of 1887 [near Kendal deficient in the species of woods and pastures; *Agaricus granulosus* entirely absent; *Boletus edulis* and *Paxillus involutus* very abundant]. Sci. Goss., Dec. 1887, p. 281.
- W. WEST. York Mid W.
Habitats of Fresh-water Algæ [in West Yorkshire, etc.; *Botrydina vulgaris*, *Sirogonium sticticum*, *Cylindrospermum macrospermum*, *Rizularia calcarea* (Gordale), *Petalonema alatum*, and *Scytonema myochrous*, only one of which, however, has a specific locality assigned]. Nat., May 1885, p. 232.
- W. WEST. Westmorland.
Pilularia globulifera in Westmoreland [*Philonotis fontana*, *Dicranella squarrosa* and *Sarcoscyphus ehrharti* also noted]. J. of Bot., Jan. 1886, xxiv. 24.
- JOHN WHITEHEAD. Lanc. S., Chesh., York S.W., Derbyshire.
Mosses of Ashton-under-Lyne District [list of about 250 species, localised within a radius of ten miles of Ashton]. Nat., March and April 1886, pp. 85-100.

NOTES AND NEWS.

We have noted with great interest the excellent series of papers on the 'History of the County Botany of Worcester,' from the pen of Mr. Wm. Matthews, M.A., appearing in successive numbers of our contemporary 'The Midland Naturalist,' and could wish that similar work were done for Lincolnshire or the East Riding of Yorkshire, both of which are comparatively neglected tracts.

Yorkshire naturalists, especially those who remember the old West Riding Consolidated Naturalists' Society in the years before it enlarged its borders and became the Yorkshire Naturalists' Union, will learn with regret of the decease of two of the most prominent of its members—Mr. Joseph Tindall, of Huddersfield, and Mr. J. M. Barber, of Heckmondwike.

Mr. Tindall, whose decease occurred in September last, devoted himself to the study of geology, and was frequently called upon at the meetings to describe the geology of the scene of the excursions, and to determine the rock-specimens and fossils brought to the meetings.

Mr. Joseph Marshall Barber, a native of Barnsley, settled at Heckmondwike, with the intellectual life of which he was identified throughout his residence there. He was one of the founders of the Heckmondwike Naturalists' Society, of the Heckmondwike Mechanics' Institute, of the Heckmondwike Juvenile Naturalists' Society, and of the Heckmondwike Antiquarian Society, of all of which he was an office-bearer and indefatigable supporter. As a member of the Naturalists' Society, he was concerned in the foundation of the West Riding Consolidated Naturalists' Society, of which at a later period he became honorary secretary; and when, in 1876, this body became the Yorkshire Naturalists' Union, he was presented with a valuable microscope in recognition of his services. He died suddenly on the 21st of November, at the age of 59, and was interred at the Heckmondwike Cemetery three days after.

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ERRATUM.

In Mr. Christie's note, p. 331, for 'may I assure,' read 'I beg to inform.'

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